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SYMPOSIUM ON THERAPY

TREATMENT OF ACUTE RESPIRATORY DISEASES.*

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The scope of this subject is so large it will be necessary to condense discussion of the various methods of treatment into a brief outline in order to complete it in the allotted time.

For convenience the acute diseases of the respiratory tract may be divided into two main groups: *First:* Acute infections affecting the upper respiratory tract, and *Second:* Diseases of the bronchi, lungs and pleura.

The upper respiratory tract affections may be divided into: First, Diseases of the nose and accessory sinuses; Second, Diseases of the pharynx, and Third, Diseases of the larynx and trachea.

Because of the close proximity of these open avenues of infection, the writer has chosen to discuss this division of the subject under the caption of the common "cold," so-called influenza or la grippe.

Probably the most frequent of human ills are infections in the upper air passages. The common "cold" is always with us and, while it may be considered a minor ailment, it should not be taken lightly, since it is usually the forerunner of more serious conditions, such as sinusitis, bronchitis, pneumonia, pleurisy and diseases of the cardiovascular and urinary systems.

Osler, in his Practice of Medicine, wrote: "Acute catarrhal inflammation of the upper air passages popularly known as colds or catarrh is usually an independent affection but may precede the development of another disease."

There are unfortunately no specific drugs or methods applicable to the treatment of the common cold but an early appreciation of the symptoms, namely, congestion of the nose and throat, pain in the head and eye balls, aching in the muscles generally but particularly in the back muscles, chilly sensations and fever with malaise, will oftentimes prove life saving provided treatment is instituted early.

The patient should be put to bed and kept in bed until he has been free from fever for from two to four days. Rest not only tends to reduce the severity of the infection and attendant symptoms but lessens the chances of complications and reduces the length of incapacity.

Fresh air is important because it assists in reducing the congestion of the infected mucous membrane surfaces. Undue chilling should, of course, be guarded against.

Tepid alcohol rubs or sponges are helpful in that they promote skin activity and stimulate the circulation.

The *diet* should consist of easily digestible foods of a nourishing quality and high in carbohydrates.

Fluids are given freely, thus aiding in the excretion of waste products and assisting in the prevention of dehydration.

At the onset it is wise to administer a purgative, such as castor oil or a saline, but the constant use of purgation is unwise.

A hot drink is often helpful because it will cause sweating and thereby aid in reducing toxemia.

Drugs—There have been many preparations advised in various doses and combinations. The antipyretics are most extensively used, such as acetanilid, acetphenetidin, antipyrene and others. When these are given in large or continued doses they are apt

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to cause depression and hence it seems wise to administer them in small doses, preferably in combination with some stimulant such as caffeine or strychnine. The salicylates have been found to be of particular value in the hands of a majority of writers. Opium or some of its derivatives in combination with the salicylates is used extensively. Deihl, in an exhaustive study of colds among the students of the University of Minnesota in 1933, stated: "It seems quite definite from the results of this study that opium and its alkaloids are of distinct value in the treatment of coryza." The chief result observed, in this report, was a marked or complete early disappearance of nasal congestion and discharge and a lessening of toxic signs and symptoms. The writer prefers a combination of Dover's powder, caffeine and acetylsalicylic acid in small amounts given at frequent intervals.

Headache is a troublesome symptom for which codeine seems to be the most useful drug.

Coryza, when not relieved by the preparations mentioned above, will at times respond to the use of belladonna, quinine and camphor-monobromate given in combination in small amounts. At times, however, the nasal passages will require the use of cocaine, epinephrin or other vaso-constrictors, administered locally either by spray or nasal applications.

Cough is a symptom almost universally accompanying the condition and as a rule will respond to some elixir containing codeine or heroin in combination with ammonium chloride if the cough is non-productive. It must not be overlooked that severe cough often is caused by congestion or infection of the maxillary sinuses associated with the common cold, and local treatment or surgical intervention may be called for.

Gastro-intestinal symptoms, such as nausea, vomiting and diarrhea with abdominal cramps occur at times. These are relieved usually by abstinence from food for a few hours and the administration of paregoric or spirits of chloroform with bismuth and, if fluids are required, glucose and saline, or Ringer's solution may be given intravenously.

Restlessness and insomnia caused by the toxemia and nasal congestion can be relieved by the bromides or barbiturates.

If there are evidences of circulatory weakening, digitalis, coramine, caffeine or adrenalin should be employed according to the acuteness or seriousness of the cardiac state.

Should anoxemia occur, the oxygen tent has proven of inestimable value.

There is a tendency on the part of many to administer alkalies in large doses to patients suffering infections of the upper respiratory tract. While this procedure may be of considerable aid in the majority of cases because acute infections are often accompanied by acidosis, it should be borne in mind that the utilization of such preparations can be overdone and that alkalosis is just as damaging to body tissues as is acidosis.

Vaccines and sera have been tried and advocated by a great many clinicians but the writer believes the use of foreign proteins, such as omnadin, neolacmenase, or the various forms of milk preparations given intramuscularly early in the disease, are of greater value in assisting body resistance.

Complications of the common cold or influenza occurring in the upper respiratory tract are most frequently located in the nasal accessory sinuses and throat and should best be treated by the rhinolaryngologist by local applications or by surgical means.

The second portion of this discussion will now deal with the bronchi, lungs and pleura.

Acute bronchitis is usually associated with or caused by infections in the upper air tract or mouth and hence the general treatment is the same as that advised under treatment of the common cold. Among the drugs most frequently employed for the inflammation in the bronchial tree are tincture of benzoin inhalations with steam. Creosote is extensively employed because it is eliminated through the bronchial mucosa and is supposed to have a soothing effect as well as a mild antiseptic action on the infection, but it often upsets the stomach and therefore is not applicable in all cases. Belladonna, especially when used in combination with phenobarbital, has been found to be efficacious. Codeine, heroin or morphine often are required to quiet the cough, and, of course, local care of the nose, throat and mouth is advised.

There is one particular form of bronchial infection requiring specific treatment known as bronchospirochetosis which is caused by the Vincent's organism, first described by Castellani in 1906. The specific drugs advised in this condition are the arsenicals or tartar emetic given intravenously, or

fuadin (a preparation of antimony) given intramuscularly. It is needless to state that the mouth should be carefully treated by a dentist since the infection most always originates about the gingival margins.

The general treatment of pneumonia is the same for both types (lobar and bronchial) with few exceptions, which will be noted in the discussion.

Pneumonia should be treated as an infectious disease of severe character with a view of preventing spread of the infection to other parts of the body and safeguarding vital organs such as the cardiovascular system, the urinary system and the central nervous system.

The patient should be kept in bed and protected physically and mentally as completely as possible. The senile patient may be more comfortable in a semi-upright position. Visitors should not be allowed. The routine care is not different from that suggested for the common cold and therefore will not be discussed further.

It is the writer's opinion that all adult cases should be digitalized early in the disease in order to protect the heart which is laboring under the stress of toxemia and increased work. Morphine is of inestimable value in those cases who are restless or suffering from pain or cough.

The alcoholic beverages are useful in cases of restlessness and under-nourishment, and the chronic alcoholic.

At times the blood chlorides are found to be low. When practicable they should be determined and if found deficient sodium chloride given intravenously is often a life saver.

If dehydration occurs the administration of glucose with normal saline or Ringer's solution is advised.

In 1930, Henderson, Haggard, Coryllos, Birnbaum and others conceived the idea that the pneumonia patient would be improved if the air passages were kept open and drainage promoted by deep breathing. To this end they advised the inhalation of 5 to 7 per cent carbon dioxid with oxygen or air with good results.

For cyanosis, especially complicating the bronchial type, oxygen given under a tent, administered preferably in the early stages, has been used with excellent results.

Specific serum therapy is applicable in cases of lobar pneumonias of types I and II. The use of antiserum began with the studies of Neufeld and Handel in 1909, when they concluded that the sera of animals immunized with the pneumococcus were capable of passively protecting other animals.

In 1917 Cole and his associates reported 10 per cent mortality in 371 type I cases treated with the antiserum. Since that time clinicians have used antiserum in the treatment of the pneumonias types I and II with encouraging results. Unfortunately, however, about one-third of the cases of lobar pneumonia are caused by either pneumococcus type III for which there is no specific serum or one or more of the infectious organisms having an elective affinity for lung tissue. Therefore, the use of specific sera should be employed only in those cases where typing of the offending organism has been defintely determined.

Artificial pneumothorax has recently been advocated by some writers and condemned by others in the treatment of lobar pneumonia. Leopold and Lieberman, after an analysis of 197 cases treated by themselves and other investigators, report a mortality of 29.4 per cent treated by this method. (At this point is seems advisable to recall that the average mortality rate of lobar pneumonia is from 25 to 35 per cent). These investigators conclude that artificial pneumothorax is of distinct value when used in the first three days of the disease. They also recommend its use in adults only, and coincident with all other appropriate measures. Stoll, Hopkins and Martin advocate the use of pneumothorax in those cases for which there is no specific serum. From a digest of the literature it would seem that the method of artificial pneumothorax is still in its infancy and that diagnosis by X-ray studies should be made before its utilization because it would be damaging to collapse one side of the chest if there were existing disease on the opposite side.

Inflammation of the pleura may occur as a complication of pneumonia or independent of lung affections. It may be fibrinous, serofibrinous or there may be pus in the pleural cavity, which is known as empyema. In all cases the patient should be put to bed and given the routine care advised for any acute respiratory disease. Fixation of the chest by strapping is advisable and assists in relieving pain. The serofibrinous type is treated by removing the fluid from the pleural cavity by thoracentesis followed by fixation of the affected chest. The writer

has not used artificial pneumothorax in these cases, but it occurs to him that the injection of air into the pleural cavity of these patients, after the withdrawal of fluid, might tend to prevent adhesions and relieve pain.

Empyema should be treated by surgical methods and the patient supported and protected as in all severe infections of the respiratory tract.

There are other methods of therapy, such as diathermy, in the treatment of pneumonia, and intertracheal injection of lipiodol and other drugs advocated in the treatment of bronchial affections, but their uses are limited and time does not permit of a full discussion of these methods.

BIBLIOGRAPHY

Osler, William: Practice of Medicine, 1909.
Deihl, H. M.: *J. A. M. A.*, Vol. 101, No. 26.
Henderson, Y., Haggard, A. W., Coryllos, P. N., and Birnbaum, G. L.: *Arch. Int. Med.*, January, 1930.
Neufeld, F., and Handel: *Ztschr. f. Immunitatis forsch. Orig.*: 3:159, 1909.
Cole, R.: *J. A. M. A.*, January, 1929.
Leopold, S. S., and Lieberman, L. M.: *Ann. Int. Med.*, Vol. 9, No. 1, July, 1935.
Stoll, Henry F., Hopkins, Henry P., and Martin, John C.: *Ann. Int. Med.*, Vol. 8, No. 12, June, 1935.

TREATMENT OF ACUTE INFECTIONS OF THE UPPER URINARY TRACT.*

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The spirit of this symposium, as related to the upper urinary tract, is to introduce a discussion of those measures which may be employed by the general practitioner in combating acute infection without the instrumental and other aids which lie at the hand of the specialist.

The assignment is not easy. Manifestation of bacterial invasion in this area may be associated with direct pathological processes, varying widely in extent and gravity, and not infrequently accessory factors of serious surgical import also lie concealed behind the clinical pictures of so-called pyelitis. Without elaborate diagnostic machinery not readily at the disposal of the general practitioner—and sometimes with it—it may be quite impossible to visualize the actual condition present and yet such visualization is highly important in many instances. Given two cases presenting almost identical degrees of fever, pain, vesical disturbance and pyuria and one may resolve itself into a simple transient infection which will yield to almost any treatment or even no treatment, whereas the other will become increasingly, perhaps desperately, ill because of widespread distribution of infection due to static urine resulting from calculus or some other cause. The measures applicable to the former will obviously not be appropriate to the latter—and yet for an appreciable and perhaps significant period of time there may be no means of differentiating between them. This disturbing thought is but one of many, some of them highly complex, which arise in the presence of acute infection of the upper urinary tract; and when to this is added a considerable divergence of opinion regarding treatment, even in the presence of well-established diagnosis, the difficulties of the writer will be understandable and his hesitancy excusable.

For practical purposes it seems desirable to postulate a case which though it cannot without complete urologic study be so described unqualifiedly yet actually exists in vasts numbers, namely simple uncomplicated acute infection of the renal pelvis and renal parenchyma, commonly known as pyelitis or pyelo-nephritis. Upon occasions even these will require more than general medical management and it will be necessary to refer again to this fact. On the other hand, many or most of them will yield to procedures that may be readily administered by the general practitioner and a consideration of these procedures is the immediate purpose of this paper.

Rest in bed is essential and might be taken for granted if I had not encountered febrile patients with acute pylitis paying regular visits to offices for

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prescriptions and instructions. Pain and general discomfort attending this condition may be considerable and call for relief by means of mild sedatives or opiates if necessary. Diet should be bland and yet should not be restricted to the point often observed. Fever does not require starvation of the patient and especially is this true in renal infection. It is important to keep these cases well nourished and it is my own habit to feed them liberally. The appetite may be regarded as a quite safe guide.

Attention to the bowels is of particular importance not merely for the purpose of ordinary elimination but because the intestinal tract is often the primary focus of a renal invasion. Generally speaking, cathartics are avoided, but a daily enema, or colonic irrigation, becomes a fixed part of the therapeutic program. Alteration of the intestinal flora by means of the bacillus acidophilus is highly recommended by some but I have not received sufficient encouragement to continue its use.

Drugs by mouth may as well be reduced to the minimum required by symptoms. Much has been written of urinary antiseptics and it is probable that the profession, including the expert urologist, will continue under the spell of the high-pressure salesmen. For my part, I have long ago discarded the steadily recurring and always expensive new preparations. If one is disposed to use antiseptics at all—and they may be of some real value at the level of the bladder—none will be found superior to the familiar hexamethylenamine or urotropin provided a reasonable degree of urinary acidity is coincidently maintained. The possibility of employing this drug intravenously should be borne in mind; also that it is quite irrational to use an antiseptic and dilute it with so large a fluid intake that its bactericidal value, highly questionable at best, becomes totally imaginary. During the antiseptic stage of medication fluids should be restricted to actual needs.

As between the two the fluid will be found far preferable and, in fact, here one approaches a major consideration in the management of urinary infections. By one means or another the tide of urine should be kept at a high and steady level, as thus not only is toxemia combated but an actual bland irrigation of the whole urinary system is established. If the patient is not nauseated there is no better way of accomplishing this than by the oral administration of water. If this avenue fails, one may resort to hypodermoclysis or venaclysis. It is quite possible, however, to over-do the latter with perhaps serious consequence. I feel quite safe and satisfied with the subcutaneous administration of several thousand cubic centimeters of fluid a day stimulated by the preliminary or concurrent intravenuous use of 50 c.c. of 50 per cent glucose, one or more times. This concentrated glucose not only has great nutrient value but it creates tissue thirst, strikingly promoting the free absorption of fluid from the subcutaneous area.

Alkalinization of this irrigating flood may be undertaken at intervals but it need not be expected to accomplish more than possible promotion of liberal fluid intake and some amelioration of local distress in bladders particularly sensitive to acidity. The ancient custom of "disconcerting" the organism by alteration of reaction within the narrow range encompassed by the usual line of medication has little or no basis in fact. It has been thoroughly demonstrated that even under extreme therapeutic pressure the body will not produce urine of a degree of alkalinity sufficient to inhibit bacterial growth. It is much more rational, and, in fact, of genuine consequence, to direct one's energies toward the opposite end of the scale, for, whereas the system may fail of effective alkalinization, it is quite capable, under proper stimulation, of often developing acidity so intense as to prove decidedly inimical to certain bacteria. Though Clark questions this, the weight of evidence is emphatically to the contrary and even he appears to admit a certain degree of inhibition. Acidity of the urine may be influenced by the diet. Among the most effective drugs are ammonium chloride and ammonium nitrate. I am more accustomed to the former, using enteric-coated tablets up to ten grams daily, if necessary. This line of attack may appropriately be combined with the urotropin phase and it will enter very conspicuously into the ketogenic regimen presently to be considerd. Not a few cases will be found peculiarly stubborn and in some it will be quite impossible to effect the required acidity which must reach a point indicated by a pH of 5.2 or under. The general practitioner can readily determine this by adding one drop of 0.04 per cent of chlorphenol to twenty drops of the urine; at pH 5.2 the color of the urine is unchanged; a faint pink color indicates a pH of 5.5 to 5.8 Recently under the caption, "A New Acid Medication

in the Treatment of Bacilluria," Crance has offered the use of concentrated nitrohydrochloric acid in ten-drop doses as a means of quick acidification of the urine. I have found it less effective than the dilute acid though the latter must be used in conjunction with the other drugs named. Crance was also evidently not aware of the fact that Keyser, of Roanoke, a member of this Society, has for sometime been using the concentrated acid and has it listed in his admirable folder summarizing measures to prevent the recurrence of urinary calculi.

Under the relatively simple procedures described up to this point, many cases of uncomplicated acute infection of the urinary tract will promptly subside. In a certain percentage of instances, however, this happy outcome will not appear and the patient after some days of this treatment will remain quite ill. It becomes imperative then to find some other means of combating the infection, short of the instrumental attack, which will now be suggesting itself to the average urologist. Vaccines and the bacteriophage have a few ardent advocates and they may have more virtue than my own experience with them leads me to believe. Much more may be expected of two other possibilities and these, I am convinced, are entitled to weighty consideration, namely the ketogenic diet and the intravenous use of certain drugs, especially mercurochrome. Here I approach debatable and even dangerous ground, but we may as well get into it.

From time to time various preparations—neoarsphenamine, mercurochrome, acriflavine, metaphen, gentian-violet, bichloride of mercury and typhoid vaccine—have been proposed for intravenous use but I shall limit my comment to two. Neoarsphenamine in small (0.3 gm.) doses at four or five-day intervals may be found to have a definitely beneficial effect in the coccal infections. When the much more common colon bacillus is the offender, something else becomes necessary. I have found nothing equal to mercurochrome; in fact, whatever the type of infection, this drug in acute cases may be employed with the expectation of a large percentage of good results, and I unhesitatingly adopt it in any case where the above described simpler measures have failed and where I am satisfied that no stasis of urine or other complicating factor is present. It is no more invariable in its behavior than anything else of value in medicine but its virtue is so often striking that I have been won from an original position of antagonism to one of whole-hearted endorsement. I realize fully that the proposal of this next step in the treatment of stubborn acute urinary infection will be anything but popular. Yet I feel a sense of obligation in submitting it with the utmost deliberation. The drug acts, if at all, not by direct destruction of bacteria in the circulation but by the stimulation of tissue re-actions. This being true, it seems irrational to avoid the clinical manifestation of such re-action by dilution or other maneuvers so frequently recommended. My own technique varies sharply from that employed by most of the few others still using the red dye. The total dosage is moderate—somewhat above 2.5 milligrams per kilo of body weight—but this is administered in a concentrated 1 per cent solution with the definite hope that it will be promptly followed by a sharp re-action manifested by further elevation of temperature and perhaps a chill. The cases which respond best are those which have an unequivocal re-action of this sort. For a few hours the patient may be rather miserable but he is rapidly compensated by the dramatic change in his general status which often ensues. Usually a single dose is sufficient to turn the tide; if not, it may be repeated, but it will be well not to do this under four days on account of irritation of the intestinal tract and perhaps other sequelae. Extreme debilitation, advanced cardiac disease, and profound depression of renal function are the only contraindications of which I am aware. Fearfully, but emphatically, I commend this procedure to the general practitioner and with the further thought that if he gets no particular result in his first essay he try again sometime. My comment is based upon the observation of perhaps a hundred cases of one sort and another. A special intravenous ampule of the scales dissolved in 50 c.c. of distilled water will make a 1 per cent solution. The weight of the patient divided by the factor 8.8 will give the number of cubic centimeters of this solution sufficient to provide 2.5 mg. per kilo—a short-cut calculation for which I am indebted to one of my residents.

There remains for consideration the ketogenic diet, the most recent addition to our armamentarium but one destined, I believe, to play a very important role in the future. The limitations of the present discussion do not permit a comprehensive review of this extremely interesting and significant experiment.

The essential principle of this procedure is the administration of a diet so low in carbohydrates and so rich in fats that normal fat combustion is impossible and the urine accumulates intermediate ketone bodies at least one of which—beta-oxybutyric acid—is inhibitory to the life of certain organisms, and especially if it is associated with a concentration of general acidity in the urine. The limit at which this action occurs appears (Helmholz) to be 0.5 per cent of beta-oxybutyric acid and a pH of below 5.5—simple tests for both of which are available. Whether either of these principles is effective without the other is debatable—certainly the efficiency of their conjunction is being increasingly demonstrated. It is also questionable whether the effect of the ketosis is bacteriostatic (Anson Clark) or bactericidal (Helmholz *et al*). Furthermore, there is divergence of opinion with regard to the vulnerability of bacteria. The bacillary forms are admittedly much more readily brought under control and of these the Escherichia coli is quite susceptible and the aerobacter aerogenes decidedly resistent. This is fortunate since the common urinary infection is of bacillary origin and the Escherichia present is about 75 per cent of instances. The general practitioner may be content with a simple slide showing bacilli and not attempt a differentiation between the two groups, though this would give him some clue as to what to expect in terms of results. If he should be so inclined, the inoculation of a culture tube containing saccharose will establish the differentation, the Aerobacter producing gas within forty-eight hours and the Escherichia not. With infection of the coccal type, the diet, according to Helmholz, will be definitely beneficial but, according to Braasch and others, will have little or no effect. Here the neoarsphenamine therapy may prove of considerable avail.

Until comparatively recently the administration of the ketogenic diet was so complicated and difficult that it could be accomplished only in a hospital and and then often but indifferently well. As a result, its use was severely restricted. Now Clark and Keltz have performed a notable service in developing a simplified ketogenic treatment applicable to office practice. Strict attention to detail, including recognition and proper treatment of possible excessive acidosis, is still necessary but Clark's new formula is well within the range of any physician. In fact, the diet may, if circumstances require, be reduced to such simple terms as six eggs and one and one-half pints of cream (40 per cent fat) per day. Clark's very practical article, containing menus, simple tests, and reference to necessary accompanying therapeutic measures appeared in the *Journal of the American Medical Association* of January 26, 1935, and should be readily available to all members of this Society.

By means of one or more, or all, of the procedures outlined above, the general practitioner will bring the great majority of cases of simple uncomplicated infection of the upper urinary tract to a satisfactory clinical conclusion. His full duty is not yet discharged, however. Clinical cure may be insufficient. Germs may still lurk in the urine, now dormant but quite capable of producing later recurrences with steadily increasing difficulty of eradication. Treatment should not be stopped until the slide on several tests is free of pus and bacteria, and if in some cases instrumental measures are necessary to accomplish this, they should be unhesitatingly sought. Too often, even the expert urologist stops short of this point and lives to regret it later.

The general practitioner will also recall that urinary tract infections are, as a rule, secondary to foci situated elsewhere in the body and that it is idle to expect consistent permanent results without the elimination of these. I have not had the courage, as advised by some, to approach these foci in a patient acutely ill with pyelitis. But as soon as the situation has been brought under adequate control and the patient is in condition to endure attack upon the focus this should be instituted—and with thoroughness. A variety of sites will have to be scrutinized, especially the teeth, tonsils, sinuses, intestinal tract, prostate gland, cervix uteri, and gall-bladder.

Finally, one is led to conclude with the warning expressed at the outset, namely, that what may appear to be a case of simple uncomplicated acute infection of the upper urinary tract may be, in fact, something quite different. The general practitioner, therefore, will not persist too long in this conservative management in a certain minority of cases which remain seriously ill in spite of everything he has done; otherwise sepsis from carbuncle, cortical abscess, perinephritic abscess, or focal suppurative nephritis may become overwhelming; or extensive renal destruction may occur from calculus obstruction or from static urine of some other origin. Any such

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rebellious case had better be sent on to a hospital where it may have the benefit of X-ray examinations, more comprehensive laboratory study, cystoscopic exploration and treatment, or even surgical intervention. Furthermore, even when the case comes to happy state of resolution with reference to a given attack, the possibility of some complicating factor should be entertained and if the ultimate picture is not completely satisfying to the general practitioner, he should insist upon a final test to dispose of this doubt. Should he not care to go to the length of a cystoscopy for this purpose, an X-ray plate and especially an intravenous urogram will be of immense value—at least by reassurance, at most by disclosure of some condition which, unless remedied, leaves the unsuspecting patient doomed to another and perhaps more dangerous outburst.

SUMMARY

Acute uncomplicated infection of the upper urinary tract is primarily the affair of the general practitioner and in a majority of instances will be brought under control and final complete cure by measures well within his range of administration, and furthermore with a measurable degree of scientific precision by the application of a few simple office tests. Short of the instrumental procedures which appeal to the average urologist, the therapeutic steps which appear most efficient in this condition are (a) rest and relief of pain, (b) bland, but liberal diet, (c) daily enemas or colonic irrigations, (d) systematic forcing of fluids by various means, (e) acidification of the urine to a high degree if possible, (f) intravenous medication, especially mercurochrome, (g) the ketogenic diet. The last two will be adopted only after the simpler measures have failed. Antiseptics by mouth will play an insignificant role and if any are used urotropin will be as efficient as any and much less expensive than most of them. All cases should be followed until the urine is free of pus and bacteria and until demonstrable foci have been eradicated. In any case resisting this conservative treatment, a surgical grade of infection or a calculus or other complication should be suspected and the patient should be hospitalized promptly.

THE TREATMENT OF THE TOXEMIAS OF PREGNANCY.*

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In the present discussion by the term "toxemias of pregnancy" we refer to those pregnancies associated with hypertension, albuminuria, edema, headache, visual disturbances and occasionally convulsions. This general group of disorders seems to include conditions in which the underlying pathological processes may differ. In a certain percentage there is definite evidence of renal disease, usually spoken of as chronic nephritis with pregnancy, while in the remainder renal insufficiency seems to play at most only a temporary role.

CHRONIC NEPHRITIS WITH PREGNANCY

Although chronic nephritis complicating pregnancy is not a true "toxemia," the signs and symptoms are so similar to those of toxemia that it is customary to consider them together. The nephritis may have existed before, or may first make its appearance during the pregnancy. The manifestations often appear early in pregnancy; the more advanced the nephritis the earlier they appear. Renal insufficiency becomes more pronounced during pregnancy and increases as the pregnancy advances. There seems to be something connected with pregnancy which exacerbates the nephritic process and leaves the patient in increasingly worse condition after each gestation. Pregnancy is perhaps one of the most sensitive tests of kidney function, as it may reveal instances of diminished function, undetected by present clinical or laboratory tests. If the individual survives the gestation, the amount of renal damage is almost certain to be greater afterwards, so that there is justification for the assumption that pregnancy occurring in individuals with chronic nephritis definitely shortens the life expect-

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ancy. In addition, the outlook for the child is poor as placental changes affect its nutrition and development, often leading to intra-uterine death and prematurity. The salvage in children is hardly sufficient to warrant the risk to the mother.

In view of these considerations, the pregnancy in individuals with nephritis should be terminated and the earlier this is done, the less probability there is of increasing the amount of renal damage. Future pregnancies should be avoided and contraceptive measures advised when the intelligence of the patient permits their use. For the average clinic patient operative sterilization seems the wisest procedure, although if the patient is near the menopause sterilization by X-ray may be employed. In the early months the pregnancy may be terminated by abdominal hysterotomy and, at the same time, a sterilizing operation upon the tubes may be performed. In the latter months of gestation the management of these patients is essentially the same as that of the other hypertensive toxemias in the latter part of the pregnancy.

TOXEMIA WITHOUT CONVULSIONS

The "true" toxemias characteristically appear in the latter months of pregnancy, and are supposedly due to toxins or toxic substances as yet unknown. Variations in the degree and character of the symptoms, signs and pathological changes in the various organs have led to numerous classifications. The milder forms of the disorder are often spoken of as low reserve kidney, albuminuria of pregnancy, recurrent toxemia, or nephrosis of pregnancy, while the more severe forms are most commonly known as pre-eclampsia or severe pre-eclamptic toxemia. It matters but little by what name they are known, as the immediate treatment and general management are the same.

The ideal treatment of the toxemias of late pregnancy would be prevention, but as far as I am aware there is at present no certain method by which this clinical syndrome can always be prevented. On the other hand, a careful prenatal regime does seem to reduce the incidence somewhat, although the main value of prenatal care in the toxemias of pregnancy is in their early detection and treatment, often terminating the pregnancy before alarming symptoms or convulsions appear.

During the prenatal period, adequate rest should be secured even if sedatives are necessary. Adequate intestinal elimination should be secured by either fluids, diet, exercise, laxatives or enemata. Diet is often considered a factor in the etiology of toxemias, although there is little or no actual proof upon which to base this assumption. Regardless of this connection, the diet should be a general well-balanced one, consisting mainly of fruits, vegetables, skimmed milk and carbohydrates, with limitations to prevent excessive gains in weight, limiting the total gain for the pregnancy to twenty or twenty-five pounds. Meat, fish or fowl should be eaten not oftener than once daily, while there should be some reduction in the amount of fat, salt and spices. The limitation of fatty foods tends to control the gain in weight, and at the same time seems to decrease the incidence of digestive symptoms. A restricted amount of salt intake seems advisable, while at least six to eight glasses of water should be taken daily. Either orange or tomato juice should be taken daily, as well as calcium and vitamin D in some form. The hemoglobin should be determined, particularly around the middle or latter part of pregnancy and, if significantly lowered, iron should be administered in adequate dosage. Any evident foci of infection should be eliminated, for, although it is highly doubtful that they play any part in the etiology of toxemia, it is felt that they may be factors in certain other complications of pregnancy, and the woman is, at least, better off with the infected focus removed.

If the prenatal patient shows some elevation of blood pressure, albuminuria, edema or an abnormal gain in weight, an early toxemia should be suspected and certain restrictions instituted. Limitation of physical activity, additional periods of bed rest and a reduction in the quantity of food intake is advisable. Rest and sleep should be obtained by sedatives if necessary, and intestinal elimination stimulated by the administration of laxatives.

If the signs and symptoms progress under this routine or if more severe when first seen, the patient should be put to bed, preferably in a hospital. A systolic pressure consistently above 140 mm. of mercury or a diastolic consistently above 90 mm. with a moderate amount of albumin in the urine, in spite of reduced activity, reduced diet and adequate elimination, ordinarily indicates bed rest. Daily observations of the blood pressure and the amount of albumin in the urine should be made.

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Chemical studies of the blood such as the non-protein nitrogen, urea, uric acid, or blood chlorides may be made and may reveal findings of significance. The eye grounds should be observed from time to time. It is often advisable during the first forty-eight hours of bed rest to limit the intake to milk, water and sweetened fruit juices, restricting the total intake in twenty-four hours to 1,500 or 1,800 c.c. Sedatives should be administered to obtain rest, sleep, and relieve restlessness. Any of the sedatives such as bromides, chloral, or the various barbituric acid derivatives may be used. If the condition is at all severe or if the other sedatives are not effective, morphine or pantopon may be administered. After two or three days, depending on the severity of the condition, a more ample diet, preferably of low fat and low salt content, should be prescribed. If the condition shows marked improvement and the patient is still some weeks from term, activity may be gradually resumed under close observation, or if the condition remains about the same and the patient is still some weeks from term, this plan of treatment may be continued until term approaches. If the patient is at or near term, attempts should be made to induce labor. On the other hand, in those instances in which, in spite of absolute bed rest, together with sedatives, catharsis and dietary limitations, the signs and symptoms get progressively worse, the pregnancy should be terminated at an opportune time.

The method of terminating the pregnancy must depend upon all of the circumstances in the particular patient. Frequently labor may be induced by the administration of castor oil and quinine after an enema. If this is not successful, rupture of the membranes, preferably done some time after the administration of castor oil and quinine is usually effective. If these methods are unsuccessful, resort may be had to the intra-uterine insertion of bougies or bags. The occasional patient may be more safely delivered by Cesarean section, especially if the toxemia is of a fulminating character and rapidly progressing, or in the older primiparous woman in whom the presenting part is high and the cervix is long and firm, or in any instance where it seems that labor is apt to be unduly prolonged. During and after delivery the toxemic patient should be given sedatives and the amount of exertion during labor reduced to a minimum compatible with sane obstetrical care.

TOXEMIA WITH CONVULSIONS

Restlessness, muscular irritability, persistent severe headache, visual disturbances and epigastric pain often herald the approach of convulsions. It is customary to divide the treatment of the convulsive toxemias into two general methods, the radical and the conservative. The radical method, which consists in immediate delivery, has been mostly discontinued, while the conservative method, which employs measures to control the convulsions, is the generally accepted one. Different types of conservative treatment have been recommended from time to time, but on the whole the results from the various conservative methods seem about the same. It appears that most of the mild cases of eclampsia will survive, while many of the severe ones will die regardless of the type of treatment.

The essential factors in the control and treatment of eclamptic convulsions seem to be sedation and elimination. During an eclamptic attack, the patient should be kept in a quiet, darkened room with a constant attendant. The tongue should be protected during the seizures by a padded mouth gag. Sedation may be obtained by any of the numerous sedatives, the most convenient and often the most effective being morphine, although chloral hydrate, the barbituric acid derivatives or magnesium sulphate intramuscularly may be used. Sedation should, however, not be pushed to the point of marked respiratory depression. Fluid balance may be maintained and urinary elimination apparently stimulated by the administration intravenously of 300-400 c.c. of hypertonic (20-25 per cent) glucose solutions every four to six hours. Venesection has been mainly discarded in the routine treatment of eclampsia, although it is at times still helpful in the occasional case of pulmonary edema or extreme hypertension. The cardiac function should be watched closely and the early administration of such drugs as digitalis and caffeine may tide over a circulatory emergency, while the use of the oxygen tent may be helpful in marked cyanosis and pulmonary edema.

It is perhaps unwise to adopt too stringent a routine in the treatment of all instances of eclampsia. The patients should be individualized and the details of the treatment varied with the exigencies of

the particular patient. At present our routine is approximately as follows:

1. Admit to a quiet, darkened room with a nurse in constant attendance.
2. Ascertain what sedatives have been given before admission.
3. Give morphine sulphate gr. ¼; may be repeated for restlessness but not oftener than every three hours.
4. Catheterized specimen of urine for examination.
5. Venepuncture for blood chemistry determinations.
6. Three to four hundred c.c. of 25 per cent glucose intravenously; repeat approximately every six hours.
7. Two c.c. of 50 per cent magnesium sulphate intramuscularly after each convulsion.
8. Digitalis and caffeine, venesection and oxygen tent as the exigencies of the case demand.

Most commonly labor begins spontaneously and progresses normally, and delivery should be effected by the simplest method after complete dilatation of the cervix. If, after a period of time, the condition seems stationary or perhaps progressively worse, and labor has not begun, it may often be simply initiated by rupture of the membranes. Abdominal delivery should be reserved for those instances in which some indication for Cesarean section other than eclampsia exists, such as pelvic disproportion or accidental hemorrhage.

In the occasional case, convulsions may cease and consciousness return without labor having occurred (intercurrent eclampsia). Such instances may be watched closely until the spontaneous onset of labor occurs or, dependent upon the condition of the patient, labor may be induced at an opportune moment by one of the simpler methods.

Whether delivery has been accomplished or not, as soon as coma disappears and consciousness returns, water, sweetened fruit juices and milk should be given by mouth and a saline cathartic administered as soon as feasible. As recovery occurs the diet may be gradually increased, although it is advisable to continue mild sedation for several days after disappearance of the coma and the return of consciousness.

Many patients with eclampsia improve shortly after delivery. The albuminuria, blood pressure and edema decrease, while the urinary output increases, and often by ten days or two weeks all evidence of the serious illness has disappeared. At times, however, the response is slow and the persistence of abnormal findings after six weeks is usually indicative of permanent damage.

SUBSEQUENT COURSE AND TREATMENT

All toxemia patients should be followed carefully for weeks or months after delivery, and attempts should be made to determine, if possible, the degree of renal or vascular damage by blood pressure observations, eye ground and urinary examinations and kidney function tests. In some, the recovery from the illness may be complete without any evidence of renal or vascular damage, while in others some impairment may result, although so slight that it cannot be detected by any of our present tests except that of subsequent pregnancy. In still others the effects may be severe enough to produce unquestionable chronic renal insufficiency or to stimulate progressive vascular disease. If hypertension or renal insufficiency persists, subsequent pregnancies should ordinarily be avoided. If pregnancy should occur, and if the degree of hypertension or renal impairment seems to justify it, the pregnancy should be terminated and sterilization effected. Those individuals in whom all the signs and symptoms disappear promptly after delivery should be observed from time to time before attempting another pregnancy. When pregnancy does occur the patient should be followed closely throughout its course, for about half of them will again develop evidence of toxemia. Even in eclampsia, the old dictum that eclampsia hardly ever recurs cannot be relied upon, as we know that a certain percentage of eclamptic patients will have a recurrent eclampsia.

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A MORE RATIONAL TREATMENT OF THE INSANE.*

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This paper, being included in the Symposium on Treatment, needs perhaps some explanation, for I should like, with your permission, to consider treatment in the sense of handling, managing or dealing with medico-legally, rather than from a purely medical viewpoint. Therapy along rational lines has steadily improved year by year as knowledge of the pathology of organic psychoses has increased and fundamental reasons underlying many of the functional psychoses are better understood. Yet, in dealing with the mental patient, or with the so-called insane, if you please, he is usually, if sick enough, subjected to other kinds of treatment than medical before he can even begin to receive adequate medical care.

Here may I pause to explain why I have used the word "insane" in a medical paper. Insanity has legal significance. It is not a medical term. Its definition is to be found in the code of the State. Measured by advances in the science of psychiatry the definition is long out of date, but its antiquity makes it more sacred in the eyes of the law. Experience in court has taught me that lawyers know what is insanity and doctors do not. Indeed, this is perhaps as it should be, but I find myself frequently laboring to adjust myself and speak the language of the law, when I am thinking of mental disease and a sick man and the lawyer, whose questions I am trying to answer, is thinking and talking of a man who must fit into the legal definition of insanity. As doctors we are concerned with mental illness, but some or many of the patients thus affected, because of the nature or severity of their sickness, must be deprived of their liberty to prevent harm or injury to themselves or others. In this event certain legal formalities become necessary, without which they may be not eligible to receive care and treatment in one of our State hospitals. It is chiefly of those mentally sick persons who have been or are to be declared insane by legal process that I speak, and therefore I have used the word "insane" advisedly.

Why, you may ask, do I not limit my remarks to the medical treatment of the insane, and why is the doctor concerned with any other kind of treatment? I answer, because the doctor is a party to certain non-medical treatment of these patients and, if he has not, like certain doctors of an earlier age, stoned the accused or the adjudicated, he, like Saul of Tarsus, has at least stood by, holding the habiliment and consenting.

I shall not have within the time allowed me opportunity to review the history of the early treatment of the mentally afflicted, to recall the treatment to which they were subjected in the days before Pinel, to trace the establishment of humane institutions for their care and the work of Dorothy Dix, to point out the evolution from the era of custodial care to that of a more hopeful medical attitude, and the recognition of so-called insanity as but another kind of sickness challenging the best skill of the medical profession—in short, to describe the evolution of the science of psychiatry.

Nor shall I have time to indicate except in the briefest possible manner the facilities for the institutional care of the mentally sick in Virginia. Some of you may not be familiar with the fact that the State of Virginia has a capital investment of about seven and a half million dollars in its five State hospitals, that there are in these hospitals 8,975 beds for mental patients, that we admit annually over 2,000 patients, and that there is spent each year for their care and treatment over $1,800,000.00. Though many of our patients are suffering from chronic mental diseases requiring chiefly custodial care in the ordinary hospital ward, we admit at each of the State hospitals quite a large percentage of acute and curable conditions requiring careful segregation in special departments where they may be studied and where they may be given individual treatment best adapted to their needs. At Central State Hospital we are just now completing a fireproof psychopathic building connected by cor-

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ridors with our Medical Center. This unit, established several years ago, is equipped as a general hospital and is on the American College of Surgeons' list of approved hospitals. Hereafter each patient coming to the institution will be admitted to this unit where he will be studied, the findings recorded and such treatment (medical, surgical or special) instituted as may be indicated. The length of time spent here before transfer to other departments will be determined, of course, by the needs in the particular case. We believe with the general hospital set up, conveniently located, and with the better trained nursing personnel, the average patient will have a greatly improved prospect of recovery. Intensive study and careful management during the most critical period of the illness will certainly be facilitated.

Now, how does the mentally sick person manage to get into one of our State hospitals, and how is he able to avail himself of the care and treatment so generously provided? In Virginia he may be admitted as: (1) a voluntary case, (2) an emergency case, (3) a criminal on the order of a judge or jury, and (4) a commitment by a lunacy commission.

In voluntary cases the law requires the patient to pay the cost of his transportation and the cost of care and treatment while in the hospital, except in indigent cases the hospital board if it sees fit may allow him free care for a maximum period of two months. No voluntary case, pay or indigent, may be received if his admission deprives any committed case of care and treatment. The voluntary commitment would be most commendable were it not for the fact that its provisions discriminate against such patients and hence discourage its general use. Only 4 per cent of admissions to Central State Hospital are voluntary.

In emergency cases on the certificate of two physicians that the patient is violent and dangerous he may be admitted but not held more than ten days. The emergency commitment in acute and violent cases is splendid in its intent but unfortunately is not made use of to any extent in Virginia. Violent patients are commonly placed in jail instead. Practically none of our admissions are by this method.

In criminal cases the courts may commit persons charged with crime to the department for the criminal insane for observation or, if adjudged insane, for treatment. The court commitment in criminal cases needs no special comment and could hardly be improved. Four per cent of our admissions are of this class.

In the so-called commission of lunacy a judge or justice of the peace and two physicians constitute a commission which, after examination and adjudication, may commit the patient to a State hospital. Ninety-two per cent of admissions to our hospital are through the agency of the lunacy commission. It, therefore, is the usual method of getting a patient into a State hospital. The forms used by the commissin are prescribed by law and consist of: (1) The *complaint* or petition in which a relative, friend, or any person complains and petitions a judge or justice of the peace to have the person suspected of being insane examined by a commission, (2) The *warrant* issued by a justice of the peace for the arrest of the said suspect and for the summoning of two doctors and witnesses, (3) The *interrogatory* or inquisition which I shall describe more fully directly, (4) The findings and *adjudication* in which the patient is adjudged to be insane, and (5) The *order of commitment* which is directed to the sheriff or sergeant and to the superintendent of one of the State hospitals.

Following the completion of these requirements, the sheriff is charged with the safekeeping of the patient until he can be sent for by the hospital authorities. Commitment papers must be mailed to the hospital and application made for admittance. Pending completion of arrangements which frequently results in delays for various reasons the patient is customarily placed in jail unless some one gives bond for his safekeeping. In jail he is treated the same as any other prisoner, no better, no worse. While in jail he is only a prisoner—not a patient.

What disposition is made of the commitment papers? One copy goes to the hospital, an entirely proper procedure as it gives information useful to the hospital physicians in understanding the patient, and another copy goes to the Clerk of the Court of the City or County in which the patient is committed, to be there filed in his office as a permanent record. I should like to emphasize this point and call attention to the nature of this permanent record which is filed in the clerk's office, a public record open to all and sundry who may wish to peruse it for reasons of business, finance, litigation, malicious-

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ness, gossip or idle curiosity. The major portion of this document, the interrogatory—sometimes called the inquisition—is prepared by the two doctors of the commission and deals with the most intimate details of the patient's private affairs and his family and personal medical history. For example, the doctor from his personal knowledge and from information furnished by witnesses tells to the world what were the patient's characteristics before he became overtaken by the illness which is to deprive him of his liberty, his right to vote, his legal capacity to make a will, to write a check, to make a deed or, in short, of most of the privileges of citizenship. The doctor must determine and record whether or not he was honest, lazy, selfish, revengeful, stingy, speculative, quarrelsome, jealous, etc. In the case of a woman, whether she is chaste or a prostitute, the number of her miscarriages and many other matters relating to her sex life. He must record the family history as to insanity, epilepsy and inebriety, the value of the patient's property, his annual income, his record as to crime or misdemeanors, his Wassermann reaction, and, finally, all the details as to speech and behavior as observed by the commission. These and perhaps a hundred and two score other questions must be answered fully if you comply with the law.

This remarkable document, the interrogatory, is the medical part of the paper, if you please, for it is signed by only the two doctors. The information called for is such as no ethical physician would think of divulging to the public regarding one of his private patients, yet daily (between 1,500 and 1,800 commissions of lunacy are held each year) in Virginia doctors are making such records to be filed as public documents that all posterity and he who runs may read.

About whom is this record made? The pauper, the delinquent, and the ne'er-do-well? Yes, and also about your daughter, your son, your father, your mother and mine, or any other person who becomes sick in mind and must needs avail himself of the benefits of treatment at one of our State hospitals. One might let his mind run in imagination and see in the years to come heart aches and embarrassments, bitterness and tragedy resulting from the accidental or incidental perusal of this personal—private—public document by those interested in genealogy and history or by others who for sundry reasons might read the record. It might not be pleasant for a young man to learn in after years that there is a public record in addition to the hospital one which certifies that his father was afflicted with syphilis or a young woman that her mother's morals were once not in conformity with the social code. It occurs to me that in dealing with or handling the unfortunate patient who must be committed to a State hospital we have not kept pace with modern ideas as to mental disease and our treatment of them falls short of being rational in exact proportion to our dereliction in this respect.

I object to the present form of commitment, feeling it to be an instrument in the hands of doctors frequently inflicting unjust treatment on mentally sick persons seeking hospital treatment.

I object to the procedure which places a mentally sick person in jail and in the same category with the criminal, because forsooth he has encephalitis instead of appendicitis, a neoplasm located within the cranial instead of the abdominal cavity, or because at last he has reached the stage when the silver cord is loosened and the almond tree is flourishing, when the keepers of the house tremble, the strong men bow themselves, and the grinders cease because they are few. Jails may be excellent and safe places of confinement, but they are not hospitals. Jailors may be kind and humane, but they are not doctors. The care and treatment of the sick is our own responsibility, and we should not and, I believe, will not shirk it.

I object to the statute which discriminates between the citizen of Virginia who wishes to enter a State hospital for treatment as a voluntary patient and the one who is arrested on a warrant, cast into prison and committed.

I propose that the laws relating to the commitment of insane persons be so revised that the medical portion of the commitment form must not constitute a part of the public record in the clerk's office; that the petition be changed so as to omit the details relating to the patient's acts upon which the petition is supposed to be based and that this and the other portions required to be filed in the clerk's office be simplified so as to contain no more than the fact of complaint, adjudication and commitment.

I propose that the medical portion of the form be revised in such a manner as to furnish all necessary medical, social and other history and that this portion be sent only to the hospital to which the patient is to be admitted.

I propose the passage of a law legalizing the physicians' certificate commitment, somewhat similar perhaps to the one which has been used successfully in Maryland for a number of years.

I propose repeal of the provision in the voluntary commitment law which discriminates against the voluntary patient and consequently discourages a wider use of this method of admission.

I recommend to the physicians of the State a wider and more general use of the emergency commitment provision.

I recommend in order to minimize unavoidable delays that the responsibility of getting the patient to the hospital be that of the county or city of the patient's residence, and that where the patient is not violent and it is practicable, a member of the family, nurse or social worker rather than the sheriff accompany the patient.

Others have for years protested and I endorse the protest against the use of jails as places of detention for mentally sick persons awaiting transfer to the hospital. It occurs to me that the feasibility of the establishment of psychopathic wards in general hospitals in different parts of the State where a mentally sick patient could be temporarily cared for pending transfer to the State hospital is well worth considering.

Authorities of the two medical schools of the State are desirous of better facilities at their respective schools for the study of mental diseases. I heartily endorse this idea as I believe not only the patient under observation for this purpose will be benefited, but from a better understanding of psychiatry by the student will come a larger percentage of physicians who in future will be able to render a better and more rational service to the mental patient.

A committee, of which I am a member, is at this time considering certain changes in the commitment laws which we hope to have submitted by the proper authorities to the next legislature. We feel that the time is opportune to endeavor to break some of the shackles which bind us to an unenlightened age and impose unnecessary legal machinery in dealing with a sick person. While recognizing mental incompetency as a condition having legal implications, we would stress the fact that we are dealing primarily with a disease and incidentally with insanity.

My excuse for this *quasi* medical rambling is that the subject is one which concerns physicians. Unless as physicians we take the initiative in legislation which concerns the sick or in medical matters generally, others will, with results which will be far from satisfactory to us.

In conclusion, the committee referred to invites the cooperation of the members of this Society in its endeavor to put into effect measures which it feels are in the direction of a more rational treatment of the mentally sick person who becomes insane.

DISCUSSION OF PAPERS BY DRS. RINKER, GEISINGER, WILLIAMS AND HENRY, IN THE SYMPOSIUM ON THERAPY

DR. J. C. KING, Radford: I am very much pleased that Dr. Henry has selected this subject for his paper, and wish to congratulate him on having presented the facts so fully. For years I have been impressed with the injustice of this law and the necessity of its being changed. I trust the medical profession will give due consideration to it and lend its influence to having a bill passed in the next legislature correcting this method. It is entirely unfair, unjust and unnecessary to have a patient's life history, as well as the family history, aired to the public by making it public property in the clerk's office in the county in which he lives. Making this history public property is entirely unnecessary and unfair to the patient. The family physician will withhold valuable history that should go to the institution with the patient, for the reason that he does not want it aired to the public. There is no more reason why such history should be exposed for a patient who is mentally sick than one who is suffering from a physical ailment. As I have said I trust the Medical Society of Virginia will, through its legislative committee, ask that this law be changed and a more efficient one substituted in its place.

DR. A. I. DODSON, Richmond: I wish just to emphasize one or two things that Dr. Geisinger mentioned. I am particularly glad that he called attention to the importance of keeping up the nourishment in patients with acute renal infection. I think we too frequently limit the diet of patients suffering with acute pyelitis because of the fact that they have fever. I have for a long time made it a practice never to restrict the patient's diet at all if he feels like eating.

Urinary antiseptics, I think, have a place in the treatment of chronic renal infection but are of no value in the treatment of acute infections. If the patient is given enough fluid, the drug will be so diluted that it will have no effect. Water is the most important single item in the treatment of acute urinary infections.

Even if the patient is vomiting I urge the intake of a large volume of water. I think they keep down a portion of it. If they do not, fluids must be given in some other way.

Regarding mercurochrome, I have not used that to the extent that Dr. Geisinger has, but the cases in which I have given it have not suffered any ill effects from it, and on a few occasions I have had rather startlingly effective results. I use neosalvarsan much more fre-

quently; and, although I reailize it is not expected to be of help except in the coccic infections, many times it is not convenient to find out if we are dealing with the coccic infections and very often the coccic infection is overgrown by the Colon Bacillus. I have many times gotten results from the injection of neosalvarsan into the vein, and the benefits have occurred so frequently that I think perhaps we have coccic infections much more frequently than we have thought.

If there is poor urinary-tract drainage, as evidenced by a septic type temperature, with chills and marked tenderness over the lumbar region and along the course of the ureter, drainage by means of a ureteral catheter is indicated.

DR. C. J. ANDREWS, Norfolk: Dr. Dodson has mentined pyelitis of pregnancy and the question of drainage. A considerable number of these cases have some disability even after the pregnancy is ended. It is important that these be cleared up before another pregnancy at least. Suitable dilatation of the ureters will usually give satisfactory drainage and do much to prevent subsequent trouble.

The treatment of toxemia of pregnancy which Dr. Williams has described cannot be objected to. I have used magnesia sulphate in the vein instead of the muscle.

I wish to call attention to the use of potassium citrate in the treatment of early toxemia with beginning edema. If the patient is regularly weighed she may be found to have gained six or eight pounds in a week even without much noticeable edema. Potassium citrate grs. 30, every three hours, often causes this to disappear rapidly; even when there is considerable edema the result is often spectacular. Of course, after the kidneys have become seriously damaged nothing is very satisfactory.

Control of weight by accurate regulation of diet is also most helpful—counting calories has been most effective. An excessive increase in weight is known to favor toxemia.

DR. F. O. PLUNKETT, Lynchburg: I just want to say a word about my friend Dr. Geisinger's paper and what he said about the forcing of fluids. It happened that I was in a big hospital several years ago, where they delivered fifteen to twenty patients in twenty-four hours, and I was never more surprised in my life than to see that they gave no drugs. The only thing they did was force fluids.

Another thing mentioned in Dr. Geisinger's paper was throwing the reacton of the urine alkaline for a certain length of time, then acid for a certain length of time following that. Whether it is any good or not Dr. Geisinger knows better than I do. I think I have gotten results from that.

As to Dr. Williams' paper, I want to say a few words. The man doing deliveries in the rural distrcts and in the small towns is the man that needs information about the toxemias of pregnancy. Dr. Williams will never have toxemias in his private practice. The men from the small towns and the country like me (and I am sorry there are not more of them here this afternoon) are the ones that send patients in to Dr. Andrews an Dr. Williams with toxemia of pregnancy.

I am only sorry that Dr. Williams has not told u this afternoon what is the thing that we call toxemia o pregnancy—what is the cause. We do not know wha it is, what causes it. We know that the pregnancy produces from 20 to 25 per cent extra work on every orga in the pregnant woman, from her nervous system o down to kidneys, heart, lungs, and digestive syste What causes toxemia of pregnancy? I am still askin Dr. Williams.

There is no need to interrupt the pregnancy unless I fail to send the woman in or unless I fail to treat her properly during her pregnancy. If the woman is a patient of Dr. Williams' and goes to him when she is first pregnant, she is not going to have convulsions. If she comes to me then, Dr. Williams or Dr. Andrews may have to interrupt her pregnancy, unless I give her first class pre-natal care. Whatever is done, I agree with Dr. Williams that medical treatment should always be employed, whether she is seven months pregnant or even below that, or whether she is eight or eight and a half months pregnant. Try the medical treatment, rest in bed, diuretics; give them the citrate treatment if you want to. It will not do any harm. Give that woman a chance to clear up her toxemia of pregnancy before you do a Caesarean section on her; and give her a chance to deliver from below before you do a Caesarean section on her, unless there are certain signs and symptoms, which you men as obstetricians should recognize, which make you feel that she will not deliver from below without possible loss of the baby or dire results so far as her physical condition is concerned. I want to emphasize that. *There are too many Caesarean sections being done,* and I do not believe in doing Caesarean sections on toxic women (and I am not an obstetrician, I am just a man practicing out in the country), unless there are *certain symptoms,* that the *obstetrician should know,* that make him feel he will lose the baby unless a Caesarean section is done, or that he will lose the woman.

DR. JAMES K. HALL, Richmond: I regret that on account of my late arrival I heard only the concluding paper in this symposium.

I want to ask if it will not be possible and feasible to release Dr. Henry's paper to the press. I think it should be read by everybody in Virgini.a

DR. CLAIBORNE T. JONES, Petersburg: In Petersburg we have lots of ignorant cases, and perhaps lots of ignorant doctors (?), too. I have seen quite a lot of cases of toxemia of pregnancy. The majority of them I had never seen before. But we have some cases in patients that we *have* seen before. There are some cases that will not cooperate with the physician—will not come back when he tells them to, therefore we cannot control them.

I enjoyed these papers very much. I want to thank Dr. Williams for his. Dr. Henry's paper I especially enjoyed.

DR. J. F. GEISINGER: I appreciate very much the references to this paper.

You possibly recall that throughout this review the conservative line of treatment recommended is applied to acute, uncomplicated infection of the upper urinary tract, and I emphasize that one of the dangers in assuming the case is uncomplicated is the presence of unsuspected static urine. The case pictured by Dr. Dodson, with rigid muscles and septic chart, is not an uncomplicated case. Nor do I consider pyelitis of pregnancy uncomplicated. It was impossible, however, within the time limits of this discussion, to go into all the ramifications. Pyelitis of pregnancy is a story in itself. Static urine due to pregnancy is just as serious as static urine due to stone or any other cause. In pyelitis in pregnancy, if there is not very rapid and marked improvement in the patient, that case should be regarded as complicated. I should like to have it understood that this long drawn out line of treatment should not be applied to such a case of pyelitis of pregnancy where the pelvis is filled up with retained urine, because that is a very serious condition.

Acidification is much more rational but there is no other reason why you should not alkalinize the urine. It may make the patient feel better, but it will not kill the bacteria.

DR. T. J. WILLIAMS: I have not utilized potassium citrate in the treatment of the toxemias of pregnancy, but it may be of value in those patients with edema. Dr. Andrews feels that it is very useful in the treatment of edema, and I am planning to give it a trial.

Dr. Plunkett wished that I had given the cause of the toxemias of pregnancy. I did not for the simple reason that I do not know the cause and, as far as I am aware, neither does any one else. While of course prevention of the toxemias is the best method of treatment, it must be recognized that at present all of them cannot be prevented.

The importance of subsequent postpartum observations should be stressed, and the patients should be followed for weeks or months afterwards. Some of them will clear up entirely until another pregnancy may again precipitate the condition, while others will have definite sequelae with hypertension or renal insufficiency, and these individuals should not be allowed to have subsequent pregnancies.

ENDOCRINES AND PERSONALITY.

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and
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Those of us who have watched the rebirth of endocrinology and have nurtured the growth of this science are gratified to know that it is taking its place as an important factor in progressive medicine. The modern endocrinologist has had to overcome the fallacy existing in the minds of his scientific brethren, as well as his less well-informed neighbors, that he occupies himself solely with the problem of sex glandular dysfunction or devotes himself exclusively to the search for the fountain of youth. According to Englebach, "The realm of the study of the internal secretions today encompasses the fields of general medicine and surgery, serves as a vital factor in psychiatry, in obstetrics, and in gynecology, and each day brings forth new facts that widen the scope of this rapidly growing medical infant and sustains the usefulness of the endocrinologist." The progress has been and is so great that the over-enthusiast of today may become a scientist of first magnitude tomorrow; speculative hypothesis turns out to be scientific fact, and empirical preparations take their place among the great discoveries of the age. Those who are content to stand by blind and unseeing as new facts round into view, quickly find the parade has passed them by and left them ignorant of new tools and helpful ideas of immense practical clinical value.

The endocrines are the initiators and regulators of the elements of human vitality. Physical and mental development, consistent with the age of the individual, is directly dependent upon the delicately balanced, harmonious equilibrium of this group of glands. Small but mighty, they pour their powerful secretions into the blood stream, and activate and modify the speed and direction of every vital process. Hormonic action regulates conception, creates gestational stability, controls prenatal growth, and probably determines the onset of labor. Then, from the cradle to the grave, incretory products govern the course of growth and metabolism.

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Abnormalities of incretory function create individuals disproportionately precocious, premature, or retarded for their age. Transient or permanent abnormalities result from a modification of their activity, and the modern clinician is aware that these glands are responsible for more incompetency and delinquency than the chronic diseases of other systems. Nor is their derangement entirely set apart from extrinsic causes, and the endocrinologist now recognizes the specific role that foci of infection—tonsillitis, endocervicitis, and the like—play in creating endocrinopathies. Many of the contradictory reports of endocrine therapy are definitely the result of ignoring what is already known of the extrinsic factors of disease, but he who combines this knowledge with the facts to be gleaned from this new and valuable adjunct, this intrinsic, etiological factor of mental and physical derangement, gains a more complete understanding of his patient and secures specific aids to his therapeutic armamentarium.

In discussing the relationship between endocrines and personality, it will be easy to understand how important a role these glands play in personality development if we will remember that the personality is the outward expression of inner turmoil or calm, of inherent well-being or misery, of a self estimation of one's physical and mental equipment, and of a compensatory adjustment to that estimate as well as the adjustment to society in general and to more closely related and more critical individuals in particular.

Consider, for instance, the young girl or boy who develops an unsightly acne at puberty; the girl feels she is socially unattractive and at that hypersensitive stage may develop inhibitions that create her a permanent "wall flower," a timid and self-conscious creature that skirts the fringes of youthful pleasures yet never ventures to participate wholeheartedly.

No one who has observed the pitiful scene of the obese woman, striving in devious ways to attain the sylph form of her more fortunate sister, can fail to understand the inner tragedy. Here is one who starves on a diet of miserly calories to the point of destruction of her natural resistive powers, who by so doing leaves herself open to the inevitable trend of dietary and infectious disorders that follow in the wake of such a course, and who, oddly enough, remains obese. Here is another who plies herself with reducing salves and baths, with thyroid, with salts, and with a whole host of quackeries and numerous patent products of unknown toxicity or value. What can the result be? Yet these are often people of understanding and intelligence who, by virtue of that very intellect, are dissatisfied with themselves and read social disapprobation in the eyes of others.

Here is the placid, sluggish, slow moving, slow thinking dullard, the result of an under-functioning thyroid, who, as Boyd describes her (p. 524), "is usually obese, intensely phlegmatic, and will sit for hours without moving." The face is broad, Eskimo-like, expressionless. Contrast her with the energetic, forceful, business or professional leader, the high pressure salesman, the slave driving super-executive, who, thanks to an obliging gland, is an inherent top notcher, a man who creates a nation's history and has a masterful grip on the world's affairs.

Here is the pathetic case of cretinism, the "sad, old child," who, like Peter Pan, never grows up but remains a dwarf with undeveloped mind, skeleton, and sexual organs. Sir William Osler, in a passage taken from Harvey Cushing's biography, presents the picture of this human transformation and rightfully labels it the "pariah of nature."

Every gang of growing boys is an endocrine museum. Aside from the hereditary forces of growth, the factor of thyroid, pituitary, and gonadal function makes itself evident even to the casual observer. No group is complete without "Fatty," the rotund, good-natured youngster, who, despite his adioposity, displays a ravenous, uncontrollable appetite for food, moves slowly, thinks slowly, is the butt of all jokes, is easily amused and quite as easily hurt and ready to cry. The "Sissy" of the crowd is usually a graceful, handsome little lad, slight of build, quiet and reserved, and non-athletic, with a high pitched voice, hair of abnormal texture and distribution, and a general retarded growth and delay in the appearance of secondary sex characteristics. We all also recognize "Slim," the tall gawky lad, whose arms and legs are disproportionately long as compared with the rest of his body, who feels as much at home in the parlor as a bull does in a china shop. If his abnormal growth continues, we see him later in life as the Carnera of the prize ring, the strong man of the circus, the hero of the gridiron, or the stroke on the varsity

crew. We might also mention the dwarfs and midgets of the side show and vaudeville stage, possessed of all human wants and vices, and virtues, but condemned to a life of doll houses and baby clothes, who retain a permanent resentment and cynicism over the fate that decreed such devastating derangement of incretory function.

The menstrual function in the female is a normal physiologic process which in the past has been associated with numerous superstitions and taboos. Menstrual blood was regarded as impure, and even today in many parts of the world women are isolated during this period for fear they will contaminate whatever they touch. As the condition is so completely misunderstood by the lay public, it is small wonder then that many strange ideas arise from the derangement of this purely endocrine function. The woman with amenorrhea wonders what is lacking in her make-up and secretly frets over the thought that she differs from her sisters. Is she capable of normal marital relations, of child bearing, of heterosexual happiness? Is she doomed to an early disappearance of her youth? Underlying all endocrine imbalance and personality change is a strong neurotic element, and much fretting and irritability, much insomnia and general malaise is directly traceable to a disturbed incretory function and the knowledge by the patient that she is unlike the great majority of her sex. The restoration of normal menstrual function to a previous amenorrheic can change a depressed, unhappy, introverted personality into a buoyant, companionable, young lady of charm.

Dysmenorrhea.—In the days of crinoline and fainting spells, when every woman's purse was equipped with the usual "smelling salts and an aspirin, my dear," when every female was a hothouse plant shielded from the weather and other inclemencies of life, it was natural for her to spend the greater part of her existence at home, in bed or up and about, a creaking, whining, delicate creature. Today the scheme of things is changed. Women are forced to shoulder greater burdens and to acknowledge no physical or mental handicap. The woman with painful menses—and there are still many who are required to go to bed at that time—is often forced to bear up under this added strain to the point where fear of the next expected period is sufficient to bring on a trend of symptoms that are devastating in themselves. Here, again, is the strong tendency to neuroses; and here, again, we cannot condemn this group as merely neurotic, for their symptoms are based on definite functional derangements. Here, too, the endocrinologist holds out the first real hope for satisfactory cure. No longer is hospitalization and a long trend of surgical measures necessary. The mechanical and surgical contrivances of the past have been relegated to the dust heap; 58 per cent of cases definitely cured, 32 per cent definitely improved, and no improvement in only about 8 per cent of the cases shows specifically what can be done with endocrine therapy. The return to normal happy existence which these patients demonstrate shows again the close relationship between this group of glands and personality reactions.

If the scientific investigator applies his realistic attitude to the problem of happy marriage, his approach is probably as follows:

He disregards the superstitions and taboos that beclouded the issue in the past. He casts aside the theological dogmas and popular platitudes. He gives due credit to such factors as economic security, freedom from parental interference and the like, and readily arrives at the conclusion that marital happiness is based on happy sex life. He may go even further and state that such happiness provides the basis for most of our joy in life, even though he may not agree with Freud that sex is the primary motive in all of our deeds.

Consider, then, the influence of disturbed gonadal function on personality change. Here, wedded to the frigid female, is the normally aggressive male who finds no active response in his mate, no relief for the nerve tension created by unsatiated desires and who eventually and unwillingly strays from the paths of established social order at the price of destroyed self-respect and often to the destruction of home, position, and career. His wife, by a long process of self-accusation and through the knowledge that her frigidity is responsible for the loss of the love of her mate, develops neurotic traits and tendencies that only widen the gulf between them. The problem is frigidity, and the result, if untreated, is apparently disastrous. Often the situation is reversed—a highly active female bound by marital ties to a placid or impotent male. His sense of inferiority is heightened and contrasted by her aggressiveness. Adjustment under such circumstances is indeed a problem. Every day increases the number

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of cases of older women, long past the menopause, who are still fired with excessive zeal in this regard, women in the sixties and seventies married to men long past all desire. To such women are denied the peace and tranquillity of senescence. They are morbid, inwardly agitated, unjustly ashamed, and outwardly irritable, all of which belies the many finer qualities of the character they possess.

Consider the plight of the couple, happily married, who are unable to raise a family because of a functional sterility in the wife. In one such case, the husband was the last and only son, descended of an old and famous family. The marriage unfruitful, the wife became the object of familial scorn, and so great was the social ostracism directed against her that she became morose almost to the point of insanity. Happily her condition responded to proper treatment and with the birth of a son the last vestige of her unhappiness disappeared.

Lastly, we bring you the picture of menopausal distress. No doubt all of you have observed the emotional imbalance that accompanies this important period in a woman's life. There is no system in the human body but that feels the effects of this revolutionary endocrine readjustment. Severe headaches, hot flashes, backaches, visual disturbances, dizziness, disturbances of digestion, abdominal aches and pains, nervousness, insomnia—yes, even insanity—all follow in the wake of this gigantic glandular upheaval. It is inevitable that the personality suffer great changes at this time. Today, because of the advances in endocrinology, it is no longer necessary to allow a woman to crash from one phase into the other. Her way can be eased, her symptoms controlled, and the entrance into menopause be made as uneventful as any other period of her life.

We have attempted to show in this paper the relationship between endocrines and the personality. In so doing it was inevitable that we should show the importance of this new science to every phase of medicine and to every phase of life itself. We have discussed the effect of endocrines on physical, mental, and sexual growth, and have shown how a knowledge of these glands gives a more comprehensive picture of the individual patient.

The endocrinologist relies on certain specific tests—the basal metabolism test for the thyroid, and the presence or absence of ovarian, pituitary, and gonadal hormones in the blood and urine to determine the function of these glands. He has specific aids in treatment—thyroid, the newer endocrine preparations, and the use of fractional doses of X-ray to ovaries, pituitary or both. He has gone far in his researches, but much remains to be done. Cushing many years ago said that "endocrinology sailed like a bark on an uncharted sea." That is no longer so; our charts show many ports of accomplishment and guide us to achieve new results. The way points to many new and interesting discoveries and the field offers the finest and most optimistic prospects to the searcher after medical and humanitarian truths.

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CHORDOMATA AND REPORT OF A CASE.†

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It has recently been our privilege to observe and to treat a patient suffering from a tumor of the lower end of the spine. We believe that this tumor is a chordoma. The relative rarity of this kind of case, and because such cases are being reported in gradually increasing number, has warranted the reporting of our case. According to recently available reports,[1-9] there are 121 cases on record. We shall also briefly review the embryology and the characteristics of chordomata.

Virchow,[2] in 1856, was the first to describe these tumors. He reported finding soft transparent jelly-like nodules at the spheno-occipital synchrondrosis,

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†Read before the Norfolk County Medical Society, December 10, 1934, Norfolk, Va.

which did not show active growth or infiltrative properties. He designated them as ecchondrosis physaliphora, because the nodules were always situated near the cartilage, and they were of a glassy jelly-like consistency, often associated with exostosis. He believed the physaliphorous cells were vacuolized cartilaginous corpuscles.

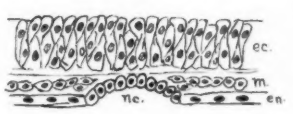
Muller,[3] in 1856, however, was the first to suggest the relation of these growths to the notochord. He wrote, "a direct relation of these growths to the chorda dorsalis cannot be overlooked and I consider them to be excessively growing remnants of the chorda. Whosoever likes the name may designate these masses as the chordoid tumors or chordomas."

The weighty opinion of Virchow prevailed, however, until 1894 when Ribbert conclusively proved that the soft clivus tumors were groups of physaliphorous cells and were the remnants of the chorda dorsalis or notochord.

To properly understand the exact nature of these growths a brief revue of the embryology seems in order.

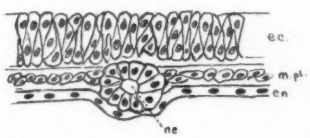
The notochord[4] is the foundation of the axial skeleton and consists of a rod of cells situated on the ventral aspect of the neural tube, and around it the segments of the vertebral column are formed. It develops simuultaneously along with the neural tube. At a close ventral position to the medullary groove an axial proliferation and thickening of the entodermic cells takes place; this thickening assumes the appearance of a furrow—the chordal furrow—the margins of which come in contact, forming the chordal tube. Soon the enlargement of the composing cells converts it into a solid elastic rod surrounded by a cuticular sheath secreted by the cells. It extends throughout the entire length of the future vertebral column and reaches as far as the anterior end of the mid-brain where it ends in a hook-like extremity in the region of the dorsum sellae of the sphenoid bone. It lies at first between the neural tube and the entoderm of the yolk sac, but soon becomes separated from them by the mesoderm which grows medially and surrounds it. From the mesoderm surrounding the neural tube and notochord the skull and the vertebral column and the membranes of the brain and spinal cord are developed. At the end of the fourth embryonic week, as the vertebral column is formed, the appearance of the vertebral bodies breaks the continuity of the notochord. It then becomes enlarged in the region of the intervertebral discs, and for a time it assumes a nodulated appearance. Ultimately the notochord disappears as a distinct structure, but remnants of it are believed to exist during the first months after birth as considerable central masses of spongy substance in the region of the intervertebral fibro-car-

Modified drawing from Morris's Anatomy, fifth edition, page 15.



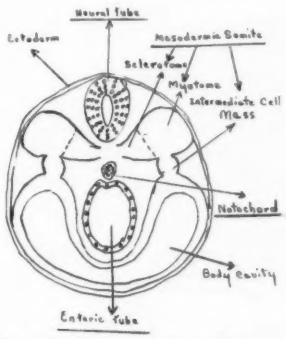
ec = ectoderm
m = mesoderm
en = entoderm
Nc = Notochord (chordal furrow)

Fig. 1.



ec = ectoderm
m.pl. = Mesodermal plate
en = entoderm
ne = Notochord (chordal tube)

Fig. 2.



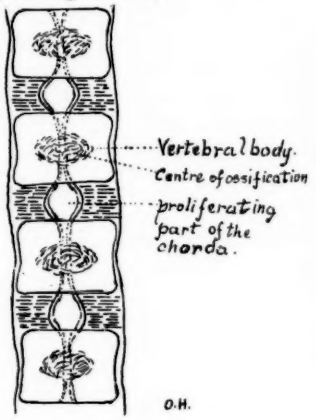
Redrawn from J.P. McMurrich's Manual of Human Embriology, Sixth Ed., page 78.

Notochord.—At first a median group of entodermic cells form a flat and curved band,—the chordal furrow.

Notochord.—The edges of the band come in contact and form the chordal tube.

Notochord-Fig 3.—Soon the enlargment of the composing cells converts it into a solid elastic rod. At this stage the notochord lies between the ectodermic neural tube and the ventrally located enteric tube which is of entodermic origin.

tilages. During the months following this period a process of atrophy reduces the notochord to the central matter of the intervertebral discs: the nucleus pulposus. (See Fig. 1 to 5.)

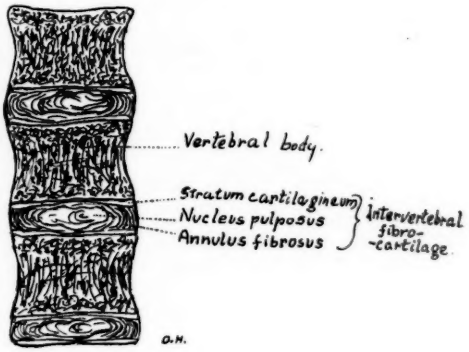


Notochord. Fig. 4. (Diagram) At the end of the fourth embryonic week, as the vertebral column is formed, the appearance of the vertebral bodies breaks the continuity of the chorda. It becomes enlarged in the region of the intervertebral discs and presents a nodulated appearance.

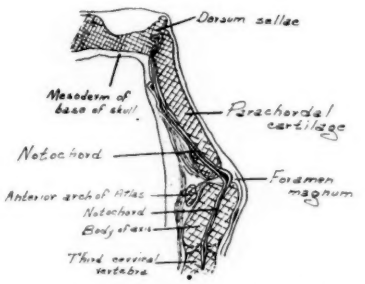
It is interesting to note, writes Piersol,[5] that in the connecting link between the vertebrates and invertebrates, the amphioxus, a small marine animal, the notochord remains as the permanent and sole spinal axis.

The extension of the notochord into the region of the head is of interest from a morphological and practical[6] point of view. It extends through the base of the cranium from the anterior border of the foramen mangum into the posterior part of the sphenoid bone. Its presence in the posterior part of the skull suggests that this region was primitively of vertebral nature. As the notochord passes through the occipital portion of the skull it pierces the basilar portion of the occipital region first from within outward and then from without in. It lies, therefore, for a short distance on the ventral surface of the rudiment of the occipital bone, in the dorsal wall of the pharynx. And this explains how some of these tumors which will be described later, are to be found in the region of the posterior pharynx due to a proliferation of the remnants of the pharyngeal portion. (See Fig. 5a.)

The development of the notochord is represented at an early stage in the ontogeny and to a certain extent the phylogency of all of the higher vetebrates. As development proceeds fluid vacuoles appear in



Notochord. Fig. 5. – Ultimately the notochord disappears as a distinct structure and during the first months following birth a process of atrophy reducesit to the central matter of the intervertebral discs: the nucleus pulposus.



Sagittal section of cephalic end of notochord.
Fig 5a – Redrawn from Gray's Anatomy.

The notochord extends through the foramen magnum into the posterior part of the sphenoid bone, ending there in a hook-like extremity. As the notochord passes through the occipital portion of the skull, it lies for a short distance on the ventral surface of the rudiment of the occipital bone, in the dorsal wall of the pharynx.

the cytoplasm of the individual cells and the cell body becomes distended and turgescent, and this accumulation of fluid provides firmness and elasticity

for the support of the primitive skeleton. At an early stage of development the notochord becomes covered by a thin refractile layer, the primary sheath[7]; the superficial cells then continue to secrete a jelly-like mucoid material which accumulates immediately internal to the primary sheath and forms ultimately a secondary sheath around the notochord. The peripheral layer of cells thus discharge their secretion and form a layer of compact cells—the notochordal epithelium—and centrally the secretion accumulates within the cytoplasm of the cells which become distended with globules.

In the development of the tumors arising from the remnants of the notochord certain or all of these phases of development of the structure are found. In some, according to Cappell[7] the tumor cells appear to reproduce with considerable fidelity the various stages in the ontogeny of the notochord. Areas of clearly demarcated epithelial cells represent the second stage of the development of the notochord. Later differentiated cells with the characteristic mucinous secretion of the notochordal cells are found. In places the secretion is poured out freely into the intercellular spaces and the cells become shrunken and the appearance of the notochord at a more advanced stage is shown. In some tumors the cells show the development of the notochord when it becomes enclosed in the centers of the intervertebral disc to form the nuclei pulposi with the irregular syncytial strands and large vacuoles of uncertain nature. The tumor may show definite sheaths around its small invasive elements representing a reversion of the tumor cells to a stage far back in the ontogeny of the individual and the phylogeny of the vertebrates.

TUMORS

Tumors of notochordal origin may, therefore, be found arising anywhere from the dorsum sellae in the skull to the tip of the coccyx. Ribbert demonstrated the derivation of the chordomas from notochordal remnants experimentally in animals by puncture of the nucleus pulposus in the center of the intervertebral cartilaginous discs and produced tumors of similar gross and microscopic appearance as those found pathologically. Linck and Warstat, as reported by Kwartin and Stewart,[2] state that "during embryonal life there can be demonstrated in certain places along the course of the notochord, nests of apparently extruded chorda cells outside of the vertebro-skull basis anlage which are in direct and close connection with the surrounding soft tissues." Cappell states that there exists normally a central thread of chordal tissue which channels or perforates the vertebral bodies. While such threads of cells serve as sufficient basis from which notochordal tumors in or on the vertebral bodies may arise, it is thought that an occasional chordoma originates directly from the nucleus pulposus. According to Cohnheim's theory, such observations may explain the origin of these tumors.

Accordingly, chordomas may be:

1. Hypophyseal.
2. Nasopharyngeal.
3. Maxillary.
4. At the tooth of the epistropheus.
5. Vertebral.
6. Caudal.

While these tumors are quite rare the most common sites are at the cephalic end and at the caudal end of the notochordal remnants. The latter may be antesacral, retrosacral or within the bone.

Small jelly-like nodules designated by Stewart as ecchondrosis physaliphora spheno-occipitalis are occasionally being found at autopsy at the clivus Blumenbachii or dorsum sellae. When, however, these tumors become large enough to cause symptoms, then the term notochordal tumor or chordoma is justified.

Chordomas are usually slow growing tumors and do not as a rule lead to an early fatal issue. They are generally regarded as malignant. The following comparison may be made concerning the average duration of life in case of tumors of the spinal region:

Chordoma	4.8 years.
Endothelioma	3.8 years.
Carcinoma, metastatic	1.8 years.
Sarcoma	1.3 years.

The average course of the spheno-occipital chordoma is shorter than the duration of the corresponding sacral tumor, the former being 2.8 years, the latter 6.4 years. The degree of malignancy varies however. Kwartin writes, "many grow slowly, are locally invasive, infiltrating and surrounding connective tissue or musculature and sometimes destroying portions of the bones." Chordomas very often show recurrences after operation, according to Stewart in 86.5 per cent of the cases. The recurrence is mostly tardy and local. A few writers be-

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lieve that the recurrences are usually due to an incomplete removal of the tumor. A thorough eradication of the growth, however, is impossible in a part of the cases. The tumors are estimated to reappear usually after nineteen months to four years.

Metastases are infrequent, none seem to occur in the spheno-occipital group, probably because the destruction of some vitally important part of the central nervous system kills the individual before

Fig. 6. Drawing of the type of tumor cells found.

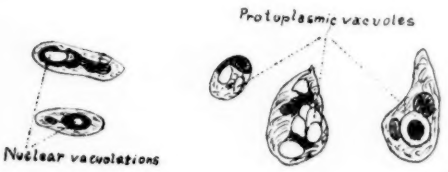

Fig 7. Drawing to illustrate the vacuolations of the tumor cells.

the tumor becomes sufficiently advanced to produce metastases. A number of reported sacro-coccygeal chordomas showed metastases in the abdominal lymphnodes and in the peritoneum. Rarely metastases to the liver are reported. Stewart's first case developed a mass over the right scapula. In a case recently reported by Willis, extensive metastases were present in the lungs, spleen, kidneys, heart, thyroid and skin. It is stated that these metastases are probably due to invasion of the iliac veins by direct extension. While these tumors nearly always arise in the midline, a bulging toward one side or the other is not infrequently observed. The caudal tumors are usually of rounded or lobulated outline and well encapsulated. It is believed that this capsule ruptures in later stages of development. The tumor is usually described as a large gelatinous, firm mass, ramifying in and about the sacrum, invading the bone or attached to the sacral and coccygeal bones. A tumor the size of a child's head may be found and may bulge posteriorly over the buttocks or anteriorly into the pelvis or invade the bone and spread both ways. The spheno-occipital group of tumors are comparatively smaller. They arise at the clivus and frequently spread toward the base of the brain or may invade the spinal canal.

On section these tumors usually present a lobulated gelatinous appearance with dense fibrous septa running through the growth. The lobules suggest marked mucoid degeneration, together with opaque cellular parts and hemorrhagic areas which are both old and recent.

The tumors are most frequently observed between the ages of forty to sixty. They are exceptionally reported in the very old and very young. Spheno-occipital chordomas manifest themselves earlier than those of the caudal region. The latter are found more often in males than females, the reason being advanced that men are more subject to trauma by

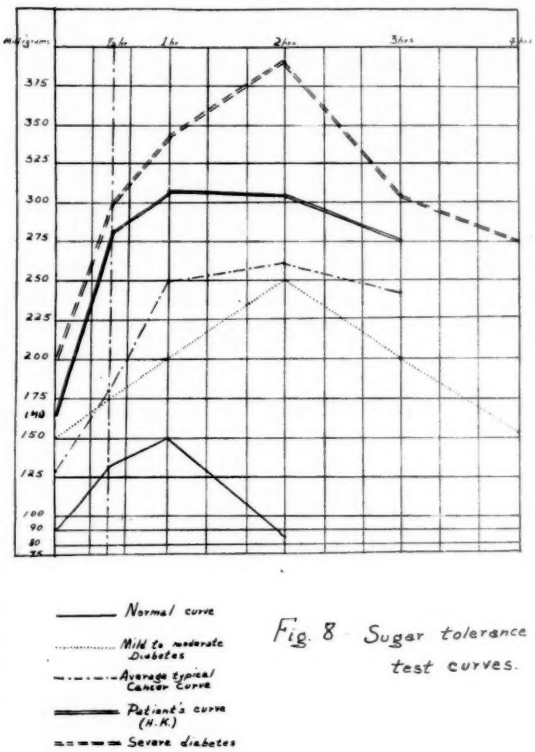

Fig. 8 Sugar tolerance test curves.

reason of their work. The factor of trauma in the production of these growths is uncertain but a large number of the reported caudal tumors gave a history of trauma. It seems a reasonable supposition that trauma may stimulate the onset of a growth or hasten one already growing.

The symptomatology varies with the location of the growth and size. The usual symptoms of the growths at the spheno-occipital region are: headaches, vomiting, dizziness, and disturbances of vision, due to increased intracranial pressure. Paralyses of various kinds may follow these symptoms as the tumor invades the nerve tracts. Dorsal or lumbar chordomas usually give rise to symptoms of compression of the cord, such as disturbances of the motor and sensory nerves of the trunk and extremities associated often with loss of the sphincter control. The symptoms of caudal tumors are pain while sitting or lying down. If the growth is

Fig. 9.—Low power view. Strands of tumor cells in mucoid matrix. The strands show an anastomosis here and there.

within the bone the pain is at the end of the spine or in between the buttocks. A tumor projecting anteriorly may interfere with the functions of the bladder or rectum. The sacral nerve roots may be involved and the pain referred along the sciatic nerve simulating a sciatica. The skin overlying these tumors is usually free and movable.

The diagnosis of chordomata is usually established only by biopsy of the removed growth. An X-ray showing a bony lesion may assist in establishing a comparatively early diagnosis. Andler (quoted by Montgomery and Wolman) states that the sacrum has a characteristic roentgenologic appearance with multiple circular or oval rarefied areas which give the bone a net-like reticular structure. A negative X-ray does not exclude chordoma. Mallory, in 1914, when only three cases were recorded, states that "chordoma is of much theoretical interest but has little practical significance." Today, however, because of the increased frequency with which these tumors are being reported, the diagnosis becomes of real practical significance.

The treatment of these tumors is essentially a surgical problem. The complete extirpation of the growth when possible is indicated. The tumors of the spheno-occipital region and the pharynx when the diagnosis is established are usually inoperable except to remove the pressure symptoms. The caudal group are more amenable to surgical removal, but here also the complete removal of the growth because of its invasive properties is rarely obtainable, and recurrences are frequent. More than one surgical attempt may be required during intervals of months to years to successfully ameliorate the symptoms. Radiation therapy, as in all types of malignancies, has been given a trial, but in this type of tumor has not been proven to be of distinct value. Concerning the type of radiation it is noted that deep roentgen-ray therapy has been mostly used in the recorded cases. Rarely a complete cure by any method is obtained.

The prognosis, therefore, is not good. The duration of life varies with the location of the growth, being longest in the caudal group where life extends over a period of years. The longest reported case is nineteen years from the time of the original diagnosis.

REPORT OF CASE

The patient, H. K., seventy-one years of age when admitted to the Marine Hospital, March 14, 1933. A retired Navy man, white, a native of Finland. Upon admission to the hospital he gave the following history: Married; four children living and well; one child died of pneumonia; family history not remarkable; gonorrhea and malaria many years ago and influenza at the age of sixty-seven. Four years ago he first noticed tenderness at the tip of the coccyx; this condition became gradually worse, but caused no great discomfort or alarm until recently. He is now unable to sleep com-

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fortably on his back because of the pain that this position causes in his lower spine. He has a pressing full sensation in the rectum and when he feels the urge to go to stool he must do so promptly.

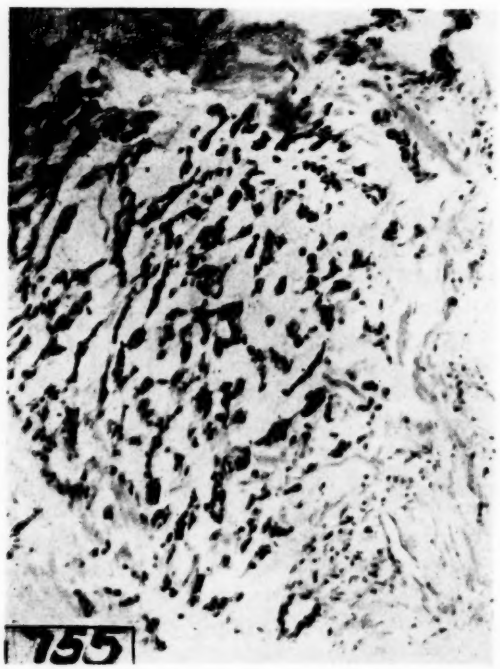

Fig. 10.—A nodule of tumor cells in connective tissue stroma. Mucinous secretions cause the small groups of tumor cells to dissociate from one another. A collection of red cells visible on top.

He at first denied ever having been injured in this region, but subsequently he has stated that about five years ago he fell and struck the lower end of the spine. This injury was at the time regarded as trivial.

Physical examination showed a well-developed, well-nourished adult white male, in good general condition, able to be up and around. He showed a marked deformity of the sacral region characterized by a bulging backward of the sacrum. On rectal examination a mass could be felt bulging forward from the sacrum. This mass felt about as large as a child's head, but the outlines could not be definitely made out. It was not movable and the internal mass appeared to be continuous with the sacrum and with the mass felt posteriorly. The mass palpated rather firm but not as firm as bone, rather of the feel about like a tense football.

The X-ray report upon admission was: "There is erosion of the lower portion of the sacrum on the anterior surface which is believed to be the point of origin of the tumor mass. Impression: Osteosarcoma." (Fig. 15 represents an X-ray of a year later.)

The urine was normal and blood Wassermann negative. The blood count indicated 5,000,000 red cells, 80 per cent hemoglobin, and 8,000 white corpuscles with 50 per cent neutrophiles, 34 per cent lymphocytes and 16 per cent monocytes. The relative increase of monocytes appears noteworthy.

After considerable discussion as to treatment an attempt at surgical removal was made on April 5, 1933; an incision was made in the midline over the bulging mass in the region of the sacrum and coccyx. The normal bone in this region was found to be

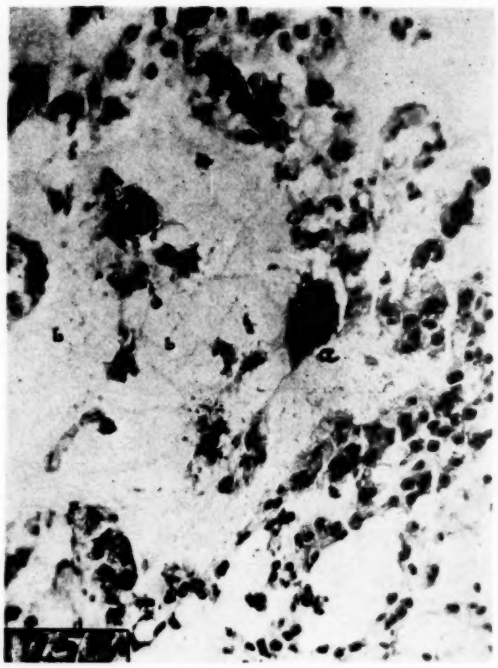

Fig. 11.—High magnification. Illustrates the variety in the size of the cells, multinuclear syncytial giant cells (a), extra cellular mucin (b), and vacuolations of tumor cells (c).

replaced by a soft friable mass which could be easily curetted out, even picked out with the fingers. On section of the growth it looked like the cut surface of a grapefruit with a sort of translucent color with septa running through the growth. In areas, varying in size from a pea to a walnut, there were

areas of hemorrhagic material of a chocolate color. The growth seemed to be very extensive. A huge cavity was excavated until it seemed that most of the sacrum and the supporting structure of the pelvis was removed. The nerve roots were exposed. There was no evidence of bone in the growth, the normal bone having been replaced as far as could be determined by this new growth. The growth extended laterally into the gluteal muscles. It was obviously very extensive and the complete removal seemed hopeless to attempt. Bleeding was quite profuse; therefore the cavity was packed and the operation completed. Following the operation, from April 24, 1933, to May 4, 1933, he was given nine X-ray treatments of 200 K. V. each.

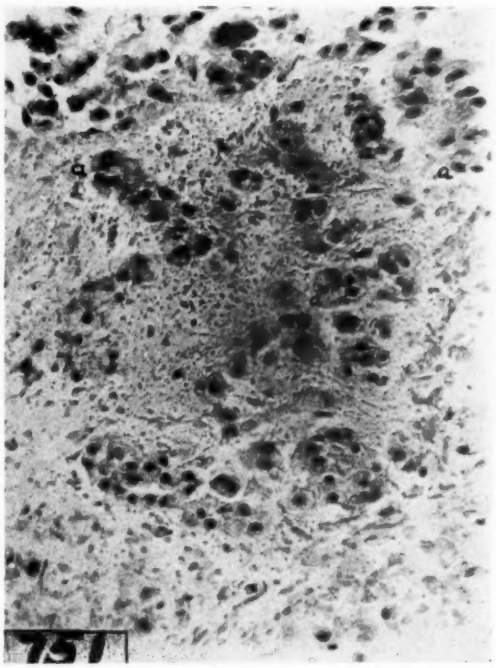

Fig. 12.—High power view. Large hyperchromatic cells of varying size and shape. Mostly polygonal and ovoid. Cytoplasmic vacuoles are noticeable (a). Some connective tissue stroma.

The sugar tolerance following treatments, which was made on May 12, 1933, showed:

Fasting blood sugar of .140 per cent and a negative urine.

After glucose was given, the findings were as follows:

After one-half hour the blood sugar was .256 per cent. Urine—negative.

After one hour the blood sugar was .282 per cent. Urine—negative.

After two hours the blood sugar was .273 per cent. Urine—negative.

After three hours the blood sugar was .246 per cent. Urine—four plus for sugar.

His convalescence following the operation was uneventful. The wound filled in slowly by granulation tissue. He felt well generally and was free from pain. It was thought for a long time that enough of the tumor might have been removed surgically together with the roentgen treatments to effect a cure. He was discharged from the hospital on June 30, 1933. Soon after discharge there were evidences of recurrence of the growth in the sacrum.

In January, 1934, the patient was re-admitted to the hospital because of recurrence of the growth. He was complaining of pain over lower sacrum on sitting up or lying down.

Pre-operative examination indicated a large, indurated and immovable mass, diameter about ten inches, over the sacral region extending laterally over the ischial tuberosities. The mass was readily palpable through the rectum.

An operation for removal of the tumor was performed under ether anesthesia on January 8, 1934. It was found that the coccyx and a greater part of the sacrum was destroyed and replaced by a tumor mass which presented gelatinous and dense fibrous areas. Most of the tumor about the remains of the sacrum were excised and the wound packed with gauze. Considerable post-operative shock was present. Post-operative course was uneventful. He was discharged from the hospital on March 16, 1934, and has been reporting as an out-patient regularly since then. The wound has filled in by granulation. At the present time there is very little deformity in the region of the sacrum. He has, however, been failing in general health and it is not believed that he will live very much longer.

The tumor was first diagnosed myxochondrosarcoma. This diagnosis of sarcoma was confirmed by Dr. Ewing Taylor, of Stapleton, N. Y. When the tissues were sent to the National Institute of Health to be studied by them, Dr. R. D. Lillie reported the result of their study, and it was he who first suggested the diagnosis of chordoma. He writes:

"We feel quite confident that the tumor is actually a malignant chordoma, as the structure as

well as agreeing with that of chordoma was not quite right for either mucous carcinoma of rectal origin or myxochondrosarcoma."

Dr. W. E. MacCallum gave no definite opinion but found the diagnosis of chordoma as the most probable.

Fig. 13.—Low power view. It illustrates an area of connective tissue stroma, containing some of the more active groups of small ovoid or rounded tumor cells (a). Small collections of inflammatory cells can also be seen (b).

Dr. James Ewing agreed with the diagnosis of chordoma on the basis of a four-year history. "A gelatinous carcinoma metastatic to the sacrum could not exist for four years without there being clear indications of a primary growth."

We would outline the histological findings as follows:

The tumor obviously destroyed and replaced parts of the bones in the sacro-coccygeal region.

Sections suggest a few small structureless remains of bone.

Frequent large areas show a loss of structure and very much extravasation of blood. Considerable amount of rather pale connective tissue and some muscle fascicules could be made out.

This stroma encloses groups and masses of tumor cells and indicates frequent foci of various inflammatory cells.

In most nests of tumor cells these cells form numerous groups and slender trabeculations anastomosing here and there. Polychrome methylene blue staining indicates that the majority of the tumor cells are imbedded in a mucinous matrix and other large groups of cells are not related with such matrix.

Sections showed a tendency of the tumor cells and syncytial type groups of tumor cells to dissociate from one another owing to a secretion of mucinous character.

The mucinous matrix is coarsely vacuolar or homogenous at places, but mostly forms a reticulum of more or less delicate fibrillae, which may or may not be filled with fine granules of mucinoid matter.

Fig. 14.—High magnification. Hyper-chromatic groups of tumor cells embedded in a mucinous matrix. This matrix forms in the upper half some reticulum of rather delicate fibrillae filled with fine granular mucinoid matter.

Frequent tumor cells contain single or multiple protoplasmic vacuoles, giving to a few cells the appearance of a typical physaliphorous cell. No content can be demonstrated in most of these vacuoles, but other vacuolar spaces enclose small mucinoid particles.

Nuclear vacuolations can also be seen in occasional cells. (Fig. 7.)

The tumor cells indicate a pronounced variation of size and almost as much of variety of shape. They are of polygonal, ovoid, spindle or stellate shape. (Fig. 6.) The cells in the mucinous area have a degenerated appearance, are very large, poorly outlined, and often form multinucleated syncytial giant cells. They have hyperchromatic, large homogenous nuclei and frequently acidophil cytoplasms. Pyknotic cells are of rather common occurrence.

Fig. 15.—X-ray of the tumor taken after the recurrence, shows a large dense shadow about the size of an orange, borders not sharply demarcated. There are multiple dense bony shadows scattered over the entire surface of the tumor mass which has replaced the lower two-thirds of the sacrum.

The tumor cells of the more active groups are chiefly rounded or ovoid, contain considerably less deeply stained nuclei, which show well-defined structure and enclose one to two nucleoli.

At several places, these cells exhibit a mosaic work arrangement together with some bluish, condensed matrix, resembling an atypical cartilaginous tissue.

Mitotic figures are rare.

The walls of a few small blood vessels are invaded by tumor cells.

COMMENTS

The significant histological points indicating chordoma, which we find in our case, are:

(a) Considerable dense connective tissue stroma.
(b) Degeneration and hemorrhages.
(c) Mucinous matrix about groups of tumor cells.
(d) Characteristic vacuolations of tumor cells.
(e) Syncytial masses of tumor cells.
(f) Cell groups, broken up in slender trabeculae.
(g) Finally: Scarcity of mitotic figures. (See Figs. 9 to 14.)

However, we find in the sections from our case a few partial deviations from the reports of other cases reported.

The vacuolization of the cells is less extensive than it is usually reported.

A radial arrangement of the tumor cell groups was very vague.

A few parts of the sections showed resemblance to an atypical cartilaginous tissue. A similar finding was recorded in a case of notochordal tumor of the dorsal spin by A. Young and D. F. Cappell.[7]

It is thought that the walls of several blood vessels were weakened by invading tumor cells, which caused the extravasation of blood corpuscles.

It may be noteworthy that with the hematoxylin eosin staining the intracellular vacuoles remained inconspicuous, while polychrome methylene blue staining brought out these vacuoles remarkably well and aided the demonstration of the mucinous matrix. (Nuclei stained blue, mucin reddish brown.)

It may be noted that large polygonal cells, seen in some sections, suggest an entodermal origin, which favors chordoma.

Clinically, the location and slow growth of the tumor, as well as its intimate attachment to the sacrum and the absence of a tumor mass in any other part of the body supports the pathological diagnosis of chordoma. The malignancy was indicated by the invasive character and the recurrence of the tumor, also by the histological appearance of the tumor cells showing a pronounced variation in size, shape and depth of the staining.

It is interesting to note that the sugar tolerance test in this case presented a "cancer curve." (In place of the normal high peak of 160 mgr. after forty-five minutes, the blood sugar rises considerably higher and such level is maintained for two hours or beyond two hours, or it is even increased after two hours.) (Fig. 8.) According to Edwards,[8] the failure to establish this kind of curve is strong evidence against malignancy. The present case may be listed among the ones where the presence of the "cancer curve" is a suggestive and corroborative sign of an invasive tumor.

Specimens of the recurrent tumor were forwarded for examination to Drs. Charles F. Geschickter,

Johns Hopkins University; E. T. Bell, University of Minnesota; R. D. Lillie, National Institute of Health, and J. P. Simmons, Northwestern University. The report of each of these pathologists was: chordoma. Our own microscopical findings were essentially the same as outlined above. Nuclear vacuoles, however, occurred more frequently than in the original tumor. Nuclear vacuoles, according to Stewart, may be regarded as one of the signs indicating a malignant chordoma.[7]

Cappell[7] states that glycogen appears to be abundant in alcohol fixed parts of chordomata. Adson, A. W., and co-workers,[9] in reference to glycogen test by Best's carmine method in approximately thirteen cases, report the finding of red staining granules in the tumor cells. Considering that their tissue specimens were fixed in formaldehyde and glycogen is extremely soluble in water, they conclude that the granules are of non-specific nature, possibly paraglycogen or some allied substance.

Our findings with Best's carmine staining for glycogen were briefly as follows:

1. Absolute alcohol fixed paraffin sections presented frequent groups of tumor cells which contained cytoplasmic red homogenous substance or coarse red granules. No such reaction seemed to be present in the nuclei. The reaction was somewhat more pronounced in occasional areas which possessed a matrix resembling the intercellular substance of cartilage.

2. Sections, fixed in 10 per cent formalin, showed a few groups of tumor cells which contained in their cytoplasm spots of a red substance, not granular in character.

The foregoing findings indicate that the absolute alcohol fixed material contained a larger number and more characteristic substances giving a red reaction than the specimen fixed in formaldehyde. Therefore, it is our impression that a part of the tumor cells contained a fair amount of glycogen and also some allied substance, possibly paraglycogen. Both substances gave the reaction in the alcohol fixed material and the latter substance was suggested in the tissue fixed in formalin. For more conclusive findings it may be necessary to study parts of the tumor, embedded in celloidin.

Probably the amount of glycogen present in chordomas is quite variable.

SUMMARY

A case of chordoma occurring in a man of seventy-one years of age is reported. The pathological findings are outlined in some detail.

A review of the embryology and characteristics of notochordal tumors are given.

A recurrence after a surgical attempt to extirpate the tumor has occurred at the end of one year, which is considerably earlier than usually reported.

The glucose tolerance test as applied in malignancies is presented.

Preliminary findings, believed to be significant, concerning the glycogen content of the tumor are reported.

REFERENCES

1. Montgomery, A. H., and Wolman, I. J.: Sacro-Coccygeal Chordomas in Children. *Am. J. of Diseases of Children,* 46:1263. December, 1933.
2. Kwartin, B., and Stewart, J. D.: Sacro-Coccygeal Chordoma. *Annals of Surgery,* 86:771, November, 1927.
3. Müller, H.: Ueber das Vorkommen von Resten der Chorda Dorsalis bei Menschen nach der Geburt and ueber ihr Verhältnis zu den Gallertgeschwülsten am Clivus. *Zeitschr. für Rat. Med.,* 2:202, 1858.
4. Gray's Anatomy, 22nd Edition.
5. Piersol, G. A.: Human Anatomy, 9th Edition, p. 28.
6. Cunningham's Anatomy, 5th Edition.
7. Cappell, D. F.: Chordoma of the Vertebral Column with Three New Cases. *Journal of Pathology and Bacteriology,* 31:797, October, 1928.
8. Edwards, S: Sugar Tolerance in Cancer. *Journal Indiana Medical Association,* 1919, 12, 296.
9. Adson, A. W., Kernohan, J. W., and Woltman, H. W.: Cranial and Cervical Chordomas. *Archives of Neurology and Psychiatry,* Vol. 33, No. 2, page 247, February, 1935.

THROUGH FIFTY YEARS—1885-1935.*

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One who labors enthusiastically at a single calling for half a century is amazed at the rapidity of the passing years.

It was in the spring of 1883 that I began the study of medicine. From my early childhood I had had a great admiration for the doctors with whom I had come in contact. They had been men of refinement and education, men respected and loved by the entire community. As I grew older I reasoned out that medicine, because it is not an exact science, would afford for one engaged in its practice, something new and interesting continually, concerning the healing and making strong the bodies of men. These were probably the two important factors that induced me to take up the calling of Hippocrates.

I began my study under the preceptorship of our splendid old family physician, Dr. William A. Pearman, of Charles City County, Va. He was a graduate of Randolph-Macon College, where he received a classical education. He had graduated from the Medical College of Virginia in 1849. His field extended over the eastern part of Henrico County and a wide area of both Charles City and New Kent. He gave me words of encouragement, for which I am still grateful. Gentle, studious, trustworthy, and capable, he made no loud declarations of his morality, but he had faith in the goodness, the power and wisdom of his Creator. From him I learned the principle that to keep abreast of the times the doctor must retain his mental acumen and acquaint himself, as well as he can, with the latest improvements as they arrive. He it was who instilled it in me that a doctor owes it not only to himself, but to his patients to keep up with the times.

I entered the Medical College of Virginia in the autumn of 1883, with what was stated to be the largest number of matriculates since the time when Dr. Hunter McGuire had brought down from Philadelphia more than one hundred students, just prior to the War between the States.

Attendance upon the lectures for two sessions of six months each was required; then an examination, approved by every member of the faculty, secured the applicant his diploma.

Among the professors of my first year were Drs. Robert T. Coleman and James B. McCaw. Dr. Coleman filled the chair of Obstetrics. He was a marvelous instructor, his lectures were informing and delivered with great earnestness and dignity. We honored him, but before the end of the term he died.

Dr. McCaw had already been a member of the faculty for years. He was a big, fine, handsome man, dignified, cultured, and a highly gifted teacher. His lectures on the Practice of Medicine elicited the interest of his class, and we counted it a privilege to have enjoyed the valuable lessons from so good and great a man. As a child I had had occasion to pay frequent visits to Chimborazo Hospital, planned and operated by Dr. McCaw.

An outbreak of smallpox in the community had resulted in my being sent to the temporary home of my uncle, at that time Chaplain in the Confederate Army, who was living with his young wife near the hospital. After the cessation of hostilities, I frequently heard him speak in euthusiastic terms of the ability and other fine qualities of Dr. McCaw.

Up to the year 1884 there had been more or less difficulty in securing material for dissection. Old Billy and Chris, the janitors, were arrested and jailed on several occasions for body snatching. Finally the General Assembly in 1884 passed a bill by which the State agreed to furnish the colleges of the State with all the bodies needed for scientific purposes.

Clinics were held at the college, the almshouse, and the penitentiary. We attended many surgical operations, but most of them compared with those of this day, were of minor importance. We witnessed only one thigh amputation, performed by Dr. Cullen. It was reported that the patient recovered. We also saw one arm removed at the shoulder. At that major operation we noticed the presence of several prominent surgeons of Rich-

*Read before the Roanoke Academy of Medicine, May 13, 1935.

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mond. We did not see a single abdomen opened. Such an operation almost invariably resulted in the speedy death of the patient. We failed to see a surgeon wash his hands or cleanse the operative area before proceeding with the operation. Afterwards he used both soap and water on his hands and arms.

The fourth edition of Bryant's Practice of Surgery was our textbook. It was published in 1883 and has long since been discarded. The idea of germs, asepsis and antisepsis was just beginning to be entertained. During an operation in the amphitheatre near the Egyptian Building, we observed a tea-kettle boiling on a diminutive oil stove and sending out steam with a faint odor of carbolic acid. The value of the vapor that reached the incision was probably negative in quantity from the standpoint of antisepsis.

Just before the administration of chloroform, it was the common practice to have the patient imbibe a stiff drink of whiskey, whether that the patient might at least die happy if the operation should not prove a success, or to cheer and encourage him somewhat for the coming ordeal, I can't say. At least, it appeared to us to be the only part of the performance that the patient enjoyed. At that time throughout the South chloroform was almost exclusively used as the general anesthetic, while in the North ether was considered the safer. It was during this time that Dr. Charles M. Shields, lecturer on diseases of the eye, ear and throat, obtained some of a new drug that was just appearing for local anesthesia. It was called cocaine.

The fine lectures on Obstetrics we heard from Drs. Coleman and Christopher Tompkins, and the study of Tyler Smith's textbook on Obstetrics gave us a fair knowledge of the subject. But we had little experience in the treating of parturients. One afternoon I was invited to go with a classmate, W. G. Belt, to help in the delivery of a young colored woman. The labor proved to be a normal one, and we were both very proud and happy at our success, and at the thrill it gave us. This was the only delivery I witnessed while attending college. I did observe the late Dr. Junius E. Warinner, Sr., remove a placenta that had already left the uterus, and was lying loosely near the outlet of the birth canal.

The School of Dentistry had not yet been established, and on going out to practice we were often embarrassed at the awkwardness and frequent failures we made when trying to extract roots and molars for country people.

On the second day of April, 1885, exactly fifty years ago, diplomas were awarded the graduating class. We sat on the stage of the old Richmond Theatre where the exercises were held. The class roll was as follows:

R. R. Ball	W. H. Harrel
J. W. Bolen	I. W. Kite
S. W. D. Brewer	D. A. Kuyk
T. P. Darracott	A. A. Leftwich
J. G. Davis, Jr.	E. C. Macon
A. C. Fisher	W. H. F. Miller
R. H. Garthright	E. W. Morris, Jr.

W. L. Williams

Graduates in Pharmacy were W. M. Anderson and William H. Nelson.

The following gentlemen composed the faculty:

Martin L. James, Dean and Professor of the Practice of Medicine.

George Ben Johnston, Anatomy.

J. S. D. Cullen, Surgery.

J. N. Upshur, Materia Medica, and Therapeutics.

J. S. Wellford, Women and Children.

Christopher Tompkins, Obstetrics.

H. H. Levy, Physiology and Pathology.

William H. Taylor, Chemistry, Toxicology and Medical Jurisprudence.

All of these have since died.

The first meeting of the Board of Medical Examiners, organized November, 1884, was held in the Hall of the House of Delegates April 8, 1885. Every applicant was required to hold a diploma from a reputable medical college. At that meeting there were twenty-five applicants, and six of them failed. At the meeting on April 5, 1887, of the nineteen who applied, seven failed. Criticism of the Board through the papers, and fiery discussions in the Legislature occurred, but at length the Governor signed an amendment to the bill, which was rather stronger than the first one. Up to 1889, 243 had been examined, and 48 per cent had failed.

To show the need at that time of protecting the people from ignorant practitioners, I quote from an article by Dr. William C. Dabney: "It is perhaps not generally known that Virginia is one of the

few states in the Union which permits anyone to practice within her borders without undergoing a preliminary examination. * * * No education, whether medical or general is required: it is not even necessary that the applicant for practice shall be able to read or write, and there are some so-called physicians in the State who can hardly write their own names." (Quoted, *Medicine in Virginia in the Nineteenth Century*). And, again, from the same volume: "The first training school for nurses in Virginia was established at St. Luke's Hospital, Richmond, Va., in 1886. Two others had already been organized in the South, one in New Orleans, and the other in Charleston, S. C."

The first two nephrectomies in Virginia were performed by Dr. George Ben Johnston.

Forty years ago the death toll in Virginia from typhoid was dreadful. You know, of course, that during the Spanish-American War the sanitary conditions existing in the camps carried off many soldiers, because doctors had not learned the cause of the contagion. Observations from thinkers and writers of the laity brought out wise and sane suggestions. It was a distinguished editor who, by his observation that "men in the Navy that drank only distilled water never contracted typhoid fever," gave one of the first directions to finding the etiology of the disease.

The City of Roanoke in 1889 contained a population approximating 10,000, with about twelve or fifteen doctors. A disease, quite prevalent in this section, and termed "Lick Fever" by both the laity and doctors, and frequently diagnosed as malaria, proved to be typhoid. The mortality from this disease throughout the ensuing decade was high. At that time Virginia cities and towns were without sewerage systems. Closets were wide open, and over foul smelling refuse back in the alleys swarms of flies crawled, then winged their way through unscreened doors and windows into dining-rooms, sharing the bread, leaving their marks on the butter, and then taking baths in the crocks of milk so kindly left open for them by the housewives. The flies, of course, have always left as a token of their appreciation, some few billion germs. The old tradition of Virginia hospitality could certainly not be gainsaid by the flies. Springs and open wells supplied the families with drinking water; schools, churches, courthouses, trains and prisons all drank this water from the democratic common drinking cup.

Roanoke in those days had no hospital, no way to take blood counts, there were no Wassermanns, no accurate way of obtaining the blood pressure, and of course it goes without saying that basal metabolism tests were yet to come. The use of hypodermoclysis had begun, but no blood transfusions were ever given, and even though the microscope revealed the presence of the bacilli of diphtheria, and antitoxin could be obtained and was used, yet the disease went on carrying off the children, because the newly discovered remedy was given in doses too small to combat its toxins.

Malaria, which had burned and shaken to pieces the bodies of Captain John Smith's followers, was still rampant along the coastal plains, and even yet has not been completely exterminated. Again a wise and observing layman indicated the way to conquering this disease. On a Virginia plantation before the War between the States, the owner of many slaves, dominated by the delusion that autumnal fevers were contracted by inhaling the night air laden, as they thought, with deadly miasma from the low grounds, ordered the slaves to be kept closely confined in their cottages at night, the doors and all openings fastened so as to exclude the entrance of the night air. The inhabitants of those cottages were never afflicted with attacks of intermittent or other forms of malaria. The mosquitoes, of course, were never noticed.

Health conditions were deplorable in the cities, towns and rural communities. No efficient boards of health had as yet been organized. Finally the Legislature was induced to make an annual appropriation of the unheard of sum of $5,000 to be used over the entire State for health purposes. It was then that God raised up a man and sent him out to labor in His field. You don't have to be told his name. Every one here knows what the name Ennion Williams means in the health annals of Virginia; but, alas! "His sun went down while it was yet day."

It was for years after I began my practice that the physicians did not know anything of the etiology of pellagra, diabetes and other maladies, which today we take so much for granted. You must remember that since then the dangerous hookworm has been run down and about eliminated; radium and the X-ray have come to make plain internal disturbances, to modify and frequently cure morbid

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conditions which, when I first started out, were hopeless from the beginning.

Efficient health boards, now working in every section to render immune the young and old from the danger of acquiring communicable diseases, were undreamed of in our days.

In 1889, Dr. John F. Winn, of Richmond, in an editorial appearing in his journal, *Practice*, stated: "The opinion is gaining ground that perityphlitis (now termed appendicitis) is a condition requiring surgical measures in a large number of instances." It was well in the nineties before men began rightly to understand the diagnosis and management of appendicitis. A few advocated its removal as soon as the diagnosis was made plain, but many gave salines and other drastic purgatives and usually postponed surgical interference until rupture and general peritonitis had set in; some doctors would then operate and tightly sew up the incision, using no drainage whatever, and of course the patient usually died. Afterwards the idea began to grow among the surgeons that it was imperative to remove the appendix immediately following the diagnosis, and if rupture had occurred and pus formed in the abdomen, free drainage was employed. And so the mortality rate from appendicitis began to be lowered.

Tuberculosis, as old as civilization, was working away at the same old grandstand and playing the leading role as the villain in the human drama, but already Robert Koch had identified the germ and Trudeau was making that great fight to regain his health in the woods around Saranac. Rumor with her thousand tongues was bringing from the North whispers of the miracle going on in that little cottage up there, now so world-famous, but the realization of that hope was yet to come. You who are young and take pneumothorax and pneumonectomy and lobectomy for granted, cannot realize the wonder we older men still feel at these miracles and the feeling we have every day that we ought to thank the good Lord for such a man as Robert Koch.

The dramatic story of the conquering of yellow fever, which you have known ever since you read your first hygiene, is an old story to you, but to us who had the thrill of living during those days, it is ever new, and we feel that we want to go down by the blue waters of the Chesapeake, and stand with uncovered heads at the little house by the side of the road where dwelt that great friend of man, and thank God for the gift of Walter Reed. He was born in a Methodist parsonage. His father, whom I knew, was a peer among preachers. His two brothers occupied prominent positions in life, one as a judge of the Eighteenth Judicial District of Kansas, the other a Confederate soldier at 18, who lost an arm at Sharpsburg, returned to the army and surrendered at Appomattox. Then he became a prominent and beloved gospel preacher, and three months ago "went to his grave in a full age (92) like as a ripe shock of corn cometh in his season." This father and his three sons were all of philanthropic and heroic build.

I have seen the good accomplished through medical, surgical, and sanitary measures for the health and comfort of the race of man during this past half century, which has exceeded that of any other similar period in the history of mankind, and I am thankful that I have had the privilege of witnessing this progress.

The new method of treating fractures of the hip "by inserting an instrument of fixation through a small incision over the trochanter holds the fracture firmly together," and is proving a boon to victims of this accident. It is of indescribable comfort to the aged and feeble, whose lives are endangered when kept flat upon their backs in bed under the use of plaster casts and heavy weights. Within twenty-four hours following the new operation, the patient is able to be up in a rolling chair, and a little later, walking about with the aid of crutches. To the old it is indeed a life saver.

"This operation was devised by Dr. H. H. Wescott, of Roanoke, Va. At about the same time he was perfecting his method, Dr. Sven Johansson, of Gottenburg, Sweden, and Dr. T. King, of Australia, were devising similar methods without the knowledge of the other's work, which would produce more or less the same result. Though this same operation has been attempted time and again, it is only recently that it has been perfected and may be used routinely in all fractures of the hip. It is gradually replacing other methods which existed in the past." Dr. Wescott says, "Possibly you would be interested in the newer treatment for infections of the joint—radical incision, leaving the joint wide open and instituting immediate active use. In acute infectious joints that do not show bruise, drawing off

the fluid is now done and air is injected to keep the membranes separated, resulting in freely movable joints which would otherwise have been ankylosed and stiff. In tuberculosis of joints, we anticipate nature and fuse the joint together, rehabilitating the case within a very few months, where nature would take years to produce the same effect."

Splendid results are daily in evidence from modern brain surgery. Vast numbers of children are kept from total blindness by the instillation of a solution of silver nitrate immediately following their births.

I could go on indefinitely repeating the signal victories won by doctors, scientists and surgeons in this time; how Reginald Fitz, a Bostonian, made plain the diagnosis of appendicitis; how, in 1886, R. J. Hall removed an appendix for the first time; or I might recall John Murphy, of the Mayo Brothers, or Howard Kelly, or Louis Pasteur, but your textbooks are replete with stories of these men.

Very little surgery was done on the liver and other internal organs prior to the beginning of the twentieth century. Hugh Taylor and George Ben Johnston both reported the surgical treatment of cholelithiasis in 1895. In 1897 George Ben Johnston reported his experience with hepatic abscess; Charles Cannaday performed a lateral anastomosis of the ileum and colon for obstruction in 1897. Earlier still, in 1888, Lewis G. Pedigo discovered and published that amyl nitrite is the antidote for cyanide poisoning.

The third volume of *Medicine in Virginia (in the Seventeenth, Eighteenth and Nineteenth Centuries)* has recently been published. These volumes describe in detail the activities of the doctors working in the State from the Colonial period to the close of the nineteenth century. Dr. W. B. Blanton, the editor, with Drs. Beverley Tucker and Frederick Rinker, of the committee, has given us this valuable work. For furthering the idea and pushing it to its successful conclusion, we are indebted to our esteemed friend and neighbor, Dr. J. W. Preston. You will find the work most fascinating, and I believe it should be in the library of all Virginia doctors.

It was in 1889, when Roanoke was young, that the Medical Society of Virginia met in this city. Every section of the State was represented. At that meeting Dr. Oscar Wiley, of Salem, was elected president. Roanoke doctors who have since held that office were: Dr. Joseph A. Gale, Dr. E. T. Brady, and Dr. J. W. Preston.

During the past fifty years, our country has been twice at war. The two afford a sharp contrast in methods of sanitation. In the Spanish-American War the lack of proper sanitation caused the death of more soldiers than all the bullets. The World War showed how very far we had come along the road of progress. The use of the sera both as preventives and as cures, and the advances in surgery, make them old stories to you now; they brought back many a soldier who else would now be sleeping in Flanders Field. The only good that seemed to come from the war, if any good thing can be said to have come from it, was the great progress in medicine.

Of course, I have time only to mention the wonderful feats in surgery of the brain, the sympathetic nervous system, pneumonectomy, and peripheral vascular diseases. Though we are still looking with hope for the solution of the cancer problem, I have infinite faith that it will come.

We older men who have passed the meridian of life can testify to the blessing of that special surgical feat that Charles Mayo calls one of the great achievements of the last ten years—the trans-urethral prostatic resection. To those of us who have needed it and received it, it will be the means of prolonging our years beyond the proverbial threescore and ten, making our old age like unto Shakespeare's Oliver, "frosty, but kindly."

It is the characteristic of men who have reached my age, to love to go back in the past and dwell lovingly over the memories of the days gone by. Bear with me just a few minutes longer while I recall that forty-six of these years have been spent in this vicinity. I became a member of the Medical Society of Roanoke shortly after its organization. It flourished for a while, then almost died, but finally came back to life, the membership increased, interest revived, and now we are working under the more dignified and classic appellation of The Roanoke Academy of Medicine.

Mingling among you in these meetings and out in the field, as occasion permitted, has been of profit and a perennial source of delight to me. Several times I have had to undergo medical and surgical

treatments in the hospitals, when you have remembered me very kindly. Your visits and cards of sympathy, your words of encouragement, and the aroma of the lovely flowers cheered and comforted me, for which I thank you sincerely.

These were a very wonderfully short fifty years that I have spent, and I can honestly say with Rabbi Ben Ezra, "Grow old along with me, the best is yet to be"; for I have witnessed those things that we deemed impossibilities fifty years ago become realities, and I have infinite faith that the things we deem impossibilities tonight will be the realities of tomorrow. With men it is impossible, but with God all things are possible.

SPONTANEOUS FISTULAE OF LARYNX—CASE REPORT.*

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Laryngeal fistulae are not recorded frequently in the literature. The preponderance of those recorded are of traumatic origin, mostly from attempted suicide in which the cartilaginous laryngeal walls were opened and the victim's life saved by missing the great vessels in the neck. This type of case will not be considered here, though it is interesting to note that, in 1873, D. H. Agnew describes a plastic operation for the closure of such a fistula. In 1886, Moolchand describes a similar procedure with favorable results obtained by each author.

No case of spontaneous laryngeal fistula was found in the literature of the past few years. Several are reported in the latter half of the nineteenth century, most of which are of tuberculous origin. Krieg reports very exhaustively in 1878 a case of "Spontaneous Fistula of the Larynx in Tubercular Laryngeal Perichondritis." This patient was fairly riddled with tuberculosis and she had multiple draining sinuses, two of which communicated with the larynx, as shown by the autopsy. However, during life, air passed in and out through these fistulae with ordinary respirations, with what the author terms, "hissing and gurgling sounds." Krieg also describes briefly three other cases that he found in the literature up to that time. The first was observed by Andral in the Charite Hospital in the summer of 1817. This was in a man with advanced tuberculosis. Air passed in and out through the fistula for a year and the size of the aperture remained the same. An autopsy showed the fistulous opening in the larynx to be a little above the anterior commissure of the false vocal cords. This accounted for the preservation of the voice during life. Andral states that this was the only case of this kind observed in more than 2,000 phthisis cases which passed through the Charite.

Krieg also refers to the case reported by Oppolzer in 1844. This also was a case of advanced laryngeal tuberculosis and the patient died three months after the fistula opened. The patient was at the point of death from asphyxiation from a laryngeal abscess. It ruptured spontaneously, producing the fistula, the patient living fairly comfortably for three months thereafter.

The third case referred to by Krieg was reported by Gunther. This was in a man, forty-eight years of age, who was a heavy drinker. A large fragment of the cricoid and thyroid cartilages was found to be ossified and exposed. A small fistula developed through the crico-thyroid membrane, allowing the passage of air in and out on respiration without pain. The fistula healed as a result of "industrious swabbing with nitric acid."

P. Thornton reported in 1883 a case of a woman aged thirty-seven who had carried a laryngeal fistula for several years. It developed following a large swelling in the neck, which she thought came from a cold. The swelling was incised and this fistula developed. The patient went from doctor to doctor in America and Europe and was treated in various ways. She wore some type of canula through the fistula for about a year. Plastic surgery was tried but failed to effect a permanent cure. The author devised a small needle which would pass to the end of the fistula, and, on repeated electrolytic treatments of increasing power, a cure was effected.

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology, at Fredericksburg, Va., May 4, 1935.

The patient remained well until last seen three years afterward.

E. H. Bennett, in 1888, reported a case of laryngeal fistula which developed from what seemed to be lupoid ulcerations of the anterior neck. Antiseptic and tonic treatment was used at first with healing of ulcerations, but the fistula remained patent. This patient had no signs of lupus elsewhere, nor any signs of tuberculosis in any form. Also, he states, there was no evidence of syphilitic taint. This woman developed a very severe case of erysipelas which wandered over the face, neck and upper body. She was very sick for a time. After that she improved rapidly and the fistula completely healed. The author states that this healing, following erysipelas, served to strengthen his view that this was a case of lupus.

CASE REPORT

On October 1, 1931, an aged colored man (about sixty years of age) was brought into the office by his family doctor. He was in very great distress and had an old handkerchief tied around his neck. His breathing was very noisy and, on examination, it was noted that he was breathing through a fistulous opening into his larynx through the upper anterior lip of the thyroid cartilage. There was much secondary infection and a large submental gland was discharging into the immediate vicinity of the fistulous opening. The opening was almost as large as a lead pencil, and a probe passed easily into the upper larynx. With each expiration there was a spray of pus and some was sucked into the trachea with each inspiration. There was a large, hard, indurated mass in the upper cervical region. It was about the size of the fist, and there was an ulceration about the size of a dime on the right side of the neck. The glands in the upper left cervical region were enlarged and indurated. The tissue along the anterior surface of the neck was also indurated.

Present Illness: First noticed trouble with neck about fourteen months ago as a little lump on right side of neck. This became very much larger, and finally ruptured when it was about the size of an orange. It would break down repeatedly. No trouble with left side. Swelling noticed over thyroid cartilage about five weeks ago. This enlarged, then finally suppurated and ruptured through when he scratched it.

Past History: Had some kidney trouble two or three years ago. No edema, no shortness of breath. Had trouble with blood about thirty-five years ago and was given medicine by mouth. Had treatments in arm about seven years ago which gave very severe reactions. This was apparently a typhoid prophylactic inoculation.

Family History: Married. One child died as infant. Three brothers. One died of asthma. Causes of death of other two unknown.

Physical Examination: Heart, lungs and kidneys were found, by his family doctor, to be in excellent condition for a man of his age. Urinalysis—negative. Wassermann—four plus.

Diagnosis: Spontaneous laryngeal fistula, probably of luetic origin, with secondary pyogenic infection.

This was a most unusual case, and there was no precedent to follow as I had never heard of a similar case. Here was a man breathing through an infected fistulous tract with every reason to expect a lung complication at any time. It was hard to see how such a condition would improve with the continual flow of pus and air through it. Also, he was breathing with difficulty and was becoming somewhat exhausted. I considered it wise to do a low tracheotomy, rest the part, give general and local treatment for his syphilis, and hope that his fistula would heal.

Operative Technique: Local anesthesia, using 1 per cent novocaine. Incision was made in mid-line of neck, beginning at the cricoid cartilage and ending just above the suprasternal notch. Dissected down on trachea by combination of blunt and sharp dissection. Whole area was indurated and the trachea was displaced somewhat to the left. There were many dense adhesions along the trachea. The trachea was opened and tube inserted.

Hospital Progress: Patient was breathing quietly after operation, except for an occasional spasm of coughing and clearing the trachea of mucus and a a little blood.

November 3, 1931.—Temperature jumped to 102 degrees. Patient fairly comfortable. There was a large amount of pus from the upper infection. The fistulous opening was cleaned well and treated with mercurochrome. He was getting potassium iodide by mouth. Tracheotomy wound dressed and tube cleaned.

November 4.—Peak of temperature 101.6 degrees

today. Local antiseptic treatment to neck. Wound dressed and tubes cleaned. Nurses took very good care of this man. He was cooperative, which probably accounts for his recovery. His general condition was better and he wanted to sit up. Allowed up for a short while.

November 5.—Greatly improved except for much pus in fistulous opening. Tracheotomy wound is secondarily infected. Wounds cleaned and treated locally. Temperature 100.2.

November 6.—Patient in excellent mood and wants to smoke. Much infection about neck, but no signs of lung complications as yet.

November 7.—Patient feels better. Fistulous opening is closing rapidly, and infection about it is less. Tracheotomy wound infected and much pus. Kept as clean as possible.

November 8.—Temperature normal. Condition improved. Some sloughing tissue removed from tracheotomy wound. Cleaned and dressed.

November 10.—Temperature normal. Wound looks better.

November 13.—General improvement in all ways. Pus less, and fistulous opening closing rapidly. Still takes potassium iodide three times a day. Temperature has remained normal. Feels good and has the run of the hospital.

November 16.—Continues to improve. Tracheotomy wound much cleaner. Fistulous opening very small.

November 19.—This patient had learned to take care of his tube and was in a very good general condition, so was discharged in a much improved condition on this date.

Follow-Up Notes: November 20.—Seen and dressed in office. Feels fine and talks a little as tube is small. Fistula about closed.

Seen in the office on November 21, 22, 23, 24. Fistula closed, and a smaller tube inserted so that he breathed a great deal through his mouth. He could breathe fairly well even with the tube stoppered up. The tube was removed on November 25 and he breathed comfortably through the larynx, and there was no escape of air through the old opening. He was seen intermittently after this, and in about a week the tracheal opening had entirely healed. The general treatment was supervised by his family doctor, so that he improved both generally and locally. He felt better than he had for years.

I observed this man for six months. He worked daily and had no recurrence. About six months ago I saw his boss and he said that the old man was still actively at work on the water front. He does not come back to see me, as I spoke to him about having his larynx after he died, and that was the last time I saw him.

CONCLUSIONS

It is interesting to note the rarity of laryngeal fistulae, especially since the turn of the century; also the fact that no case of a syphilitic fistula is found recorded. The diversified method of treatment would indicate that each case is a problem in itself. The use of tracheotomy in the treatment of this condition was not found in the records of any other case.

BIBLIOGRAPHY

1. D. H. Agnew: Laryngeal Fistula, *Med. and Surg. Reporter,* Phila., 1873, xxviii, 316-318.
2. Moolchand: Laryngeal Fistula, *Indian M. Gaz.,* Calcutta, 1886, xxi, 298.
3. Krieg: Ein Fall von Spontaner Fistula Laryngis bei Perichondritis Laryngis, Tuberculosa, *Arch. f. Path. Anat.,* etc., Berl., 1878, lxxii, 92-95.
4. Thornton: Case of Complete Laryngeal Fistula—Electrolysis—Cure, *Arch. Laryngol.,* N. Y., 1883, iv, 127-130.
5. E. H. Bennett: Laryngeal Fistula, Probably of Lupoid Origin, *Proc. Path. Soc. Dubl.,* 1880-82, n. s, ix, 102.

STERILITY FROM THE STANDPOINT OF THE FEMALE.*

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To procreate, healthy spermatozoa must come in contact with a normal ovum in the upper part of the genital tract or in the peritoneal cavity in the neighborhood of the ovary. Furthermore, the fertilized ovum must become implanted on uterine mucosa that has been properly prepared for it by a well-balanced hormonal action, where it can grow and develop, at least, to the time that it is viable.

*Read as part of a symposium on Sterility before the Richmond Academy of Medicine, June 11, 1935.

Anything that interferes with this train of events produces sterility. The problem, therefore, is a complicated one and may involve any branch of medicine from anatomy to endocrinology. It can be approached in a number of different ways. To-night I propose to present an analysis of 294 cases in which the chief complaint was that of sterility. I have applied no time limit to the sterility, but have included all cases in which the patient has complained of being unable to conceive. For the same reason I have not included the cases of habitual abortion, although they rightly belong here. These patients complain of abortion and not of sterility, and I have not had the time to get out my histories of such patients, nor would I have time to discuss that phase of my subject in time allotted to me.

Two hundred and ninety patients were white and four were colored. It is advisable to divide the cases into two groups: primary, in which the patient has never conceived, and, secondary, in which the patient has been pregnant at least once, even if it were only an abortion. One hundred and ninety-five of my patients fall into the first group and ninety-nine into the second. The average age of the patients with primary sterility was 29.15 years, the extremes being 19 and 43 years. The average age of those complaining of secondary sterility was 31.39 years, the extremes being 21 and 48 years. One hundred and two of the two groups gave the history of normal menstruation. In eighteen the type of menstruation is not stated. The chief variation from normal was pain in 109 cases, irregularity in eleven, scanty flow in six, increased flow in three, irregular in eleven, late in starting in fifteen, and early onset in thirty.

The salient features in the past history of these patients are shown in Table I. Forty-five patients had had stem pessaries or one or more curettements. In several instances as many as three curettements had been performed. Twenty-four had been subjected to uterine suspensions. In two a bilateral salpingectomy had been done. Almost one-third had had their appendices removed. This is slightly more frequent than I find in my patients at large—28 per cent of whom give a history of abdominal operation. One patient gave the history of a gonorrhoeal infection when an infant. Twenty-one gave the history of cystitis or pyelitis. Only one gave a definite history of pelvic infection and one a history of infection of Bartholin's glands.

TABLE I

PRIMARY AND SECONDARY STERILITY (293 CASES)

PAST HISTORY

45 D. & C. stem pessary, etc.
62 Appendectomy
2 Appendectomy and gall-bladder operation
19 Appendectomy and suspension
4 Appendectomy and partial oöphorectomy
4 Appendectomy and salpingectomy
2 Salpingectomy
1 Salpingectomy and partial oöphorectomy
3 Uterine suspension and partial oöphorectomy
2 Uterine suspension (24 counting those done with other operations)
2 Ectopic pregnancy
1 Fibroids
1 Gastro-enterostomy
1 Laparotomy
2 Thyroidectomy
1 Stone in ureter
12 Pyelitis
9 Cystitis
7 Arthritis
1 Pelvic infection
1 Bartholin gland abscess
1 G C when an infant
1 Recent mumps

The findings upon pelvic examination are shown in Table II. As might be expected the percentage of retroverted uteri was greater in the secondary sterility cases. The two cases of occluded vaginae are naturally found in the primary group. In countries like China where *cicatricial* stenosis of the vagina is often produced to cure uterine prolapse the picture would be different.

TABLE II

PHYSICAL EXAMINATION

	Primary Sterility (195 cases)	*Secondary Sterility (99 cases)*
Anteflexed uterus	129	61
Retroflexed uterus	52	31
Not stated	11	7
Occluded vagina	2	0
Stenosed cervix from cauterization	1	0

TREATMENT

My general plan of treatment has been, in those cases in which the history and physical examination gave no clue, to do a Huhner test. If this proved satisfactory, I next investigated the patency of the Fallopian tubes. The patients who pass this test are given a metabolism test. The patients who pass these tests without giving any clues that might serve in solving the problem, are considered from the standpoint of vitamin deficiency, anterior pituitary deficiency, or are treated along hygienic lines. The advantage of proceeding thus step by step is that it helps to evaluate the various etiological factors. The disadvantage is that it consumes more time and

some patients become discouraged before all the tests are completed.

My results in treatment of primary sterility may be summarized as follows: Of the 195 patients, thirty-five did not return after the first examination. Four of these had a cervicitis and one atresia of the vagina. Two cases were treated for syphilis and both became pregnant. One of these, a colored woman whose husband's first wife had a syphilitic child, had no other treatment. The other patient while getting treatment for her syphilis had also a Rubin test. Her tubes were found to be partially closed. She became pregnant shortly after the tube inflation, and I cannot say whether the tube condition or the syphilitic infection was the prime factor in her case. One case of constriction of the vagina (congenital) was treated and when this was cured the patient failed to return for further study. One case of intramural fibroid also seemed to be satisfied to let well enough alone when the fibroid was removed. One case of submucous fibroid was delivered of the fibroid *per vaginam*. She did not return for further treatment. One case of salpingitis stopped treatment when the inflammatory condition subsided. Four cases of secondary anemia were treated. Two became pregnant and went to term. One is now under treatment, and one stopped treatment.

This brings us to the more specific forms of treatment. Fifty-six cases of cervicitis were treated. Twenty became pregnant, and of these fifteen went to term, one had an ectopic, two aborted, one is now pregnant, and one was lost sight of after she became pregnant. Two patients are still under treatment, eight stopped treatment when the cervicitis was cured, and twenty-two went on with the sterility treatment.

Thirty-seven, thirty-six of whom had a retroversion, were treated by pessary, posture and exercise. Six became pregnant. Five went to term and one aborted. One pursued the sterility treatment no further.

A Huhner test was done forty-seven times. Thirty-one were positive, thirteen were negative. In three cases a few spermatozoa were found. It is interesting to note that one patient with a doubtful and two with a negative test became pregnant. The husbands of the patients with the doubtful and negative tests were referred to a genito-urinary specialist, but I wish to emphasize that one should be guarded in one's prognosis in such cases.

Under the head of Rubin test, I have grouped those cases in which tube inflation or salpingography was done. Some patients had both tests. In the doubtful and negative cases the tests were repeated many times. In this connection I would like to state that I have seen no ill effects from either the carbon dioxide gas or the lipiodol. I have been careful, however, not to perform these tests when there is the least suspicion of any inflammatory condition. When the tubes are open the gas causes more pain than the oil. When the Rubin test is negative, it is advisable to do a salpingography in order to visualize the obstruction. In two of many cases in which the Rubin test was repeatedly negative, salpingography showed no fluid entering the uterus. It was necessary to anesthetize these patients and to dilate the internal os before I could demonstrate the true condition of affairs. I introduced a small mushroom catheter into the uterus and then injected lipiodol. The tubes were found to be patent, and the oil entered the peritoneal cavity freely.

Eighty-eight patients were tested. Thirty-nine were positive. Ten of these became pregnant. Three went to term. One aborted and subsequently had a full-term baby. Another aborted and as yet has not become pregnant. Five are now pregnant. Fourteen patients stopped treatment after the tubes were found to be patent.

Twenty-two patients showed partial closure of the tubes. Eleven of these became pregnant. Seven have gone to term and four are now pregnant. Nine pursued treatment no further. One is still being treated for the tube condition, and two continued to the next stage in the treatment.

Twenty-seven were negative. Four patients became pregnant, three going to term and one aborting. One had a salpingostomy wth negative result. Two continued treatment for sterility in spite of the tube condition and four are being treated for the tube condition.

Under the heading of basal metabolic rate are grouped those cases in which the metabolism test was done and others in which for one reason or another the test was omitted. Some of these had symptoms of hypothyroidism. In eighteen cases in which a metabolism test was done, eight had positive rates varying from one to twenty. None be-

came pregnant. Ten had minus rates varying from one to thirty-nine. Two of these became pregnant. One went to term and one is now pregnant. Of the nine clinical cases two became pregnant. One has been delivered and one is now pregnant. One is still under treatment.

The results in the treatment of the primary cases may be summarized as follows: Forty bore live children (one aborted and then bore a live child). There were six abortions including the above, and one ectopic. Fourteen are now pregnant and fifteen are still under treatment.

A similar analysis of the ninety-nine cases of secondary sterility shows that eighteen patients did not return after the first examination. One of these had a cervicitis. One patient with a vaginitis did not return after the vaginitis was cured. Eleven patients who were treated for cervicitis became pregnant. One of these had an ectopic and one is still pregnant. Five patients did not continue treatment for sterility after the cervicitis was cured and one patient is still being treated for cervicitis.

One patient became pregnant after the routine physical examination and two others upon being treated for anemia. One other patient treated for anemia did not become pregnant and did not go any further with sterility treatment. One patient was treated at once with antuitrin and became pregnant.

Fourteen cases of retroversion were treated with a pessary. Nine became pregnant and went to term. It would seem that the pessary is much more effective in treating secondary sterility than in the primary form.

The Huhner test naturally was done less frequently in the secondary form of sterility. In the eleven cases in which it was done, it was positive seven times, doubtful four times, and negative twice. One of the patients with a doubtful test subsequently became pregnant, which again emphasizes the importance of a guarded opinion in such cases.

The tubes were investigated in thirty-two cases. Twenty-one patients of this group had patent tubes. Ten became pregnant and bore children. One, a case of endometriosis, is still under treatment. Of the five with doubtful tubes, one became pregnant and one is still under treatment. Of the six with closed tubes, two are now pregnant.

A metabolism test was done seven times. In five, the rate was positive, varying from one to sixteen. All became pregnant and went to term. Two had minus rates (five and nineteen). Both became pregnant with thyroid treatment and went to term. Two were treated with thyroid because of previous experiences, and both became pregnant and went to term.

The results in the treatment of the secondary cases are as follows: Thirty-nine bore live babies, one aborted, one ectopic, and one is now pregnant. Eight are under treatment. Forty-nine were negative or were lost sight of.

CONCLUSIONS

Thirty-six per cent of patients with primary sterility and 65 per cent of those with secondary sterility became pregnant when treated for cervicitis.

Posture and pessary treatment gave 16 per cent positive results in primary sterility and 64 per cent in secondary sterility.

Twenty-six per cent of patients in the primary group with patent tubes and 48 per cent of the patients in the secondary group became pregnant soon after this test.

Fifty per cent of patients in the primary group with partially closed tubes and 20 per cent of those in the secondary group became pregnant.

Fifteen per cent of the primary sterility patients with closed tubes and 33 per cent of the secondary patients became pregnant.

Twenty-one per cent of the primary sterility patients and 100 per cent of the secondary sterility patients became pregnant upon thyroid medication when such treatment was indicated either from the history or on account of a minus metabolic rate.

The primary group yields a total of 38 per cent pregnant cases and the secondary group 52 per cent.

It would seem, then, that cases of secondary sterility are more amenable to treatment by ordinary gynecological methods than the primary cases. Conversely, more of the cases of primary sterility have a deeper fundamental endocrine, development or congenital basis. I am sorry that the paper dealing with this phase of the subject had to be omitted from the program tonight.

CHRONIC ULCERATED COLITIS.

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The importance of prevention of chronic colitis may be reasonably placed along side of tuberculosis, heart disease and the rheumatisms, especially when one has studied carefully a few unmistakable cases, and has utilized religiously the studies of material now coming through our best journals from the foremost authorities in medicine for the past two years. If every physician would place well in his mind the ear-marks of the oncoming signs of beginning colon pathology, as no doubt many are doing, clinical results will ere long be as satisfactory as many other preventable diseases, providing, of course, full cooperation of the patient with his family physician can be had. The average physician today is better equipped than ever before to realize the ideals of the old time family doctor, granting that he is able to secure the confidence of his community, as the old doctor did, which ideal can never be improved upon. The bulk of preventive medicine has its largest hopes for best results in the family physician, as he should be unhindered by the usurpation of his rights by social and State medicine.

The study of many of the chronic diseases makes a sad picture when one pauses to consider the cost to the individual and his community, both in suffering and financial loss, largely because the family doctor is being deprived of his age-old divine heritage and rights of which he is so rapidly and wrongfully being deprived. A close study of chronic colitis reveals the cost of lack of cooperation on the part of both the patient and community, because of present-day tendencies and attitude towards the family physician.

One of the recent standard textbooks on gastro-enterology defines ulcerative colitis as an infectious disease of the large intestine. This, by implication, epitomizes the usual conception of the affections—etiology and the pathology. This definition restricts the underlying mechanism of production to the action of bacteria and their products and limits the reaction of the body to one particular segment of the gastro-intestinal tract. Studies which have been carried out by Thos. Mackie, of the Department of Public Health and Preventive Medicine, Cornell University Medical College, on a considerably large number of chronic colitis cases during the past two and one-half years convinces him that this definition is too narrow and that colitis *per se* merely is one part of a process which may and frequently does find expression in far distant parts of the body. It certainly seems probable that infection constitutes only a cog in the underlying mechanism, as borne out by close observation and study by Mackie and his co-laborers at Cornell.

For the most part, investigations into the nature of this disease have been devoted to the effort to determine a specific bacterial etiology. The results are contradictory. A variety of organisms has been suspected, and virulence has been ascribed to normal inhabitants of the colon associated with failure of the body's defense of them. Recently there has been much discussion of a specific diplo-streptococcus as the primary etiologic agent. This concept has not received universal acceptance, and the right of opinion probably rests with the statement that this organism is one of the predominating secondary invaders.

The relative infrequency with which positive cultures have been obtained and the questionable role of bacillus dysenteriae in chronic bacillary dysentery constitute important objections. Herne has well summarized the present-day position: "While it is clear that B. dysenteriae may be recovered in the stage of chronic dysentery and that it is embedded in the tissues rather than free in the lumen, its causal relationship to the lesions of chronic dysentery is somewhat incredible, especially in view of the severity of the disease and the paucity of the organisms. One cannot lightly discard the alternative hypothesis that recurrent dysentery is really ulcerative colitis to which acute dysentery has predisposed the patient."

Quoting Mackie: "Present-day Investigation. Specific Bacterial Etiology. We have attempted to gather additional evidence for this controversy. Cultures have been made through the sigmoidoscope from eighty-three consecutive cases of chronic ulcerated colitis seen in hospital, dispensary, and private

practice in New York city. Blood specimens from these patients have been tested for agglutinins against standardized suspensions of strains of B. dysenteriae. Evidence of infection by members of this group was obtained in thirty-five (42 per cent) of the series. Cultures and agglutination reactions on 103 control cases revealed similar evidence in nine, of whom seven were then, or had recently been suffering from acute or chronic diarrhoea. We encountered the same sources of objections which have been raised in the past against the many other bacteriologic theories of etiology. And we encounter additional evidence of the fact that neither a negative culture nor absence of specific agglutinins constitute valid evidence against infection by these organisms. The results of this study have been advanced as additional evidence against the hypothesis of a specific, primary bacteriology in ulcerative colitis. In view of conflicting results of similar studies and the wide divergence of authoritative opinions, it seems probable that a variety of organisms may, under special conditions, initiate the pathologic process, and be responsible in some instances for its continuance."

The well-recognized difficulty of treatment and its common lack of success again call into question the narrow concept of the disease mechanism. So-called "specific therapy," whether by vaccine or by serum, frequently is without material effect upon the course of the disease. Such results imply misconception of the role of the various bacteria to which etiologic significance is attached, undue faith in the bactericidal effect of the therapeutic preparations or the coincident action of factors other than those of infection which play an important part. Clinical investigation of this group of cases leads us to believe the latter to be the fact.

ETIOLOGY FROM STANDPOINT OF VITAMIN DEFICIENCY

It has been suggested that vitamin deficiency combined with infection contributes importantly to the etiology. "Deficiency" symptoms are said not infrequently to occur. Advanced grades of deficiency disease have been reported occasionally but they are relatively uncommon. However, the rarity of the clinical entities to which formal names are attached conveys the impression that, although deficiency states do occur in severe instances, they are to be regarded as somewhat unusual complications rather than an integral part of the morbid mechanism of ulcerative colitis. In the past, this factor has been brushed aside with the statement that, although experimental evidence is striking, it is not supported by actual experience with patients.

Recent clinical and experimental studies have added much to our knowledge of the physiology of the vitamins. The anti-neuritic vitamin G has been shown to play an important role in appetite, in the production of hydrochloric acid in the stomach and in the motor activity of the intestinal tract. Lack of vitamin G leads to the development of atrophy of the lingual papillae in animals. Administration of this substance to man is followed by regeneration of the mucous membrane of the tongue and the disappearance of smooth atrophy. Inadequate supply of this factor intimately is related to certain of the macrocytic anemias. Recently characteristic changes in the skin have been attributed to lack of vitamin A.

It is apparent, therefore, that it is necessary to broaden the scope of deficiency disease to include more than xerophthalmia, scurvy, rickets, beri-beri and pellagra. Chronic vitamin deficiency probably leads to numerous vague, border-line states which are not included within existing clinical nomenclature. Cowgill considers these conditions likely to be much more complicated in man than they are in the experimental animal. Keefer believes that the composite clinical picture results not simply from lack of a single factor, as a vitamin, but from inadequate supply of other essential food substances, such as protein, iron, calcium, phosphorus and iodine.

Although certain of the recognized deficiency diseases have been encountered, the importance of deficiency states in ulcerative colitis systematically has not been investigated. Since the clinical expression of these conditions has been considerably extended in recent years, it seemed to us desirable to study the incidence of symptoms and physical signs pointing in this direction.

SUMMARY OF MATERIAL IN MACKIE'S GROUP

The data collected by other workers and the results of our own studies lead us to believe that chronic ulcerative colitis is a disease resulting from the action of a complicated mechanism. It seems probable that this mechanism is only partially understood and that additional factors are involved

which at present are not appreciated. Although the immediate exciting cause appears to be the action of bacteria or their products upon the wall of the colon, existing evidence does not support the view that a specific race or strain is responsible. The converse proposition is more easily defended—that the primary agent may be any of a variety of different organisms. The similarity between the pathology of ulcerative colitis and that of bacillary dysentery, together with the results of cultural and serologic studies, suggest that, in a certain proportion of patients, B. dysenteriae may initiate the pathologic process.

The disease syndrome is not one which is limited wholly to the colon. Structural and functional abnormalities are demonstrable throughout the entire small intestine in a large proportion of the cases. Associated clinical phenomena and pathologic changes in other organs and tissues indicate that the morbid process is not restricted entirely to the gastro-intestinal tract but that chronic ulcerative colitis is, strictly speaking, a systemic disease associated with various clinical manifestations.

The incidence of "deficiency" signs and their variety suggest that deficiency disease constitutes one of the important factors in the initiation and the maintenance of ulcerative colitis. However, the scope of this term must be broadened so as to include not only the effects of inadequate supply of certain vitamins, but also the clinical expression of deprivation of protein and of essential inorganic substances.

Similarly, the evidence pointing to an allergic state of the intestinal tract obtained in many patients suggests that this factor also may play a significant etiologic role.

A few thoughts relative to treatment are suggested by Bargen, of the Mayo Clinic.

Cases of chronic ulcerative colitis may be divided into two major groups from the standpoint of treatment—the uncomplicated cases, and the cases in which there are complications, such as polyps, strictures, perforations, fistulae, regional disease and carcinoma. In cases in which these complications are present (representing approximately 15 per cent of the whole), surgical intervention is indicated.

In reference to uncomplicated cases, we find those in which systemic complications and sequelae are present, such as arthritis, erythema nodosum, uveitis, and other complications.

Rest is an important therapeutic agent in these patients. The type of rest must be very carefully chosen. There is a great need for encouragement, and for physical, mental and physiologic rest. The features of treatment which the years have taught to be of value have not been discontinued, nor would it be expedient to replace them by a single therapeutic agent. In attempting to give rest to the intestine, the residue in the food is reduced as far as possible.

Intestinal irrigations usually are not only not helpful, but in the majority of cases are actually harmful, causing more distress, greater frequency of rectal discharges, and often irritation about the anus. The only exceptions to this are to be found in the cases in which there is extensive ulceration of the anus and rectum, producing great local discomfort. In such cases instillation or topical application of some soothing medicament or powder may be helpful.

At first it might seem that the ideal method of giving rest to the colon would be by ileostomy. Actually, the risk of the operation is so great and the end-results so disappointing that at the Mayo Clinic it is avoided as much as possible. In the seventy-eight cases in which ileostomy has been performed in a decade, one of every two patients died in the hospital or later, and at the time of death had not recovered from the chronic ulcerative colitis. Ten of the surviving patients, who were subjected to ileostomy for sequelae after the colon practically had healed, were satisfied with the results.

Quoting Bargen, of the Mayo Clinic, concerning vaccines and sera:

"Immunization against the diplo-streptococcus of chronic ulcerative colitis with a concentrated serum has been an important adjunct of the Mayo Clinic treatment for the past six years. The serum has been injected intramuscularly and, more recently, intravenously. Injections are begun with minute doses, gradually increased, being careful to keep dosage under the point of local or systemic reaction. When response is noted, improvement may be slow but usually is progressive. Clearing up severe symptoms as fever toxic states, and bleeding may take weeks. As soon as this state is reached vaccine is prepared from diplo-streptococcus of chronic ulcerative colitis and given subcutaneously in gradually increasing doses less the point of local or systemic reaction for many weeks. After several months'

period of rest, treatment should be resumed and the vaccine given again for six or eight weeks. Where the diplo-streptococcus agglutin reaction is obtained, a program such as this should be continued for one or two years or even longer to assure future protection. This procedure has proved the greatest single item in preventing recurrence of the disease."

TRANSFUSION

Transfusions of blood may have great value, especially when the patient has bled profusely from the bowel, is very anemic and weak, or when marked sepsis with high fever prevails. A series of transfusions of small quantities of blood (250 to 300 c.c.) five or six days apart, possibly three in a series, has served best. Transfusions have proved particularly efficacious for children. It is noted that children less than twelve years of age with chronic ulcerative colitis are especially prone to the development of severe anemia.

DIET

Many physicians are prone to restrict too greatly the amount of food needed. As a result the patients lose in strength and ability to fight the malady. The ideal foods are those of high protein and vitamin content, with the lowest residue for the colon; hence the importance that the stomach and upper intestine are functioning at a good degree. Beef, rice, white bread, cereals, cooked eggs, butter and cream, are found to leave a very low colon residue.

DRUGS

No single drug has been found which will help more than an occasional patient. Gentian-violet, or the fresh tincture of iodine, seems to have helped selected patients. Gentian-violet, in doses just enough to color the stools, definitely inhibits the growth of streptococci. The arsenic preparations are dangerous. They may cause a flare-up, and it would be difficult to do anything for the patient if this should occur. The same may be said about mercurochrome and metaphen, as found by actual experience at the Mayo Clinic.

For anemia, 40 or 50 grains of reduced iron daily has proved helpful.

Paregoric and codeine may be given for relief of pain and tenesmus.

For frequent stools, bismuth, tri-basic phosphates and the preparations of kaolin are often very helpful.

Strontium bromide, 5 to 7 gr. doses, with luminal, ¼ to ½ gr., may be used every four to six hours, as required, to control extreme nervous symptoms.

Removal of all foci of infection is imperative, septic teeth, infected tonsils, just as early as the patient's condition will allow and as the physician's judgment dictates.

Relapses are common. Fifty-seven per cent were initiated by acute infections of the upper respiratory tract. Recurrences are more prone to occur during the winter months. Much may be done to prevent relapses—periodic use of diplo-streptococcic vaccine where this type is found. Careful and sure removal of all foci of infection, physical and emotional stress and strain, as well as exposure to weather changes, should studiously be avoided. Care in eating and drinking to prevent intestinal upsets are some of the many cautions which help to avoid exacerbations which are so much dreaded by both patient and physician, and which tax the physician's ingenuity to the utmost during an attack, be it primary or a relapse.

BIBLIOGRAPHY

Thomas T. Mackie, M. D., Cornell University Med. College, New York City. *American Journal of Digestive Diseases and Nutrition,* September, 1934.

J. A. Bargen, M. D., Division of Medicine, The Mayo Clinic, *American Journal of Digestive Diseases and Nutrition,* May, 1934.

Cecil's Textbook of Medicine, 1934.

ETIOLOGY OF INDIGESTION.*

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The etiology of diseases producing the symptom of indigestion might be more clearly defined if one resorts to three simple classifications:

First.—Those diseases situated in the alimentary canal proper or adjacent thereto.

Second.—Those situated external to the gastro-intestinal tract.

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Third.—The so-called functional disorders.

Perhaps one would be benefited in the discussion of the symptoms of indigestion if we review briefly the anatomy, histology, physiology, and pathology, of the gastro-intestinal canal, as approximately 65 per cent of the conditions causing the symptom of indigestion arise in this tube, or in very closely associated organs adjacent to the tube. The other 35 per cent giving indigestion as one of their symptoms will be found external to the gastro-intestinal tract, but reflexly, physiologically or biologically, will affect the functions of the organs of the gastro-intestinal tract.

The alimentary canal, for the sake of discussion, may be divided into the oral cavity, pharynx, esophagus, stomach, small and large intestines and anal orifice. This tract forms a continuous tube whose walls have throughout its entire extent many common characteristics. Thus, the wall in all portions consists of four coats which are respectively known from within outwards as the mucous, submucous, muscular and fibrinous. The three outer coats are of similar structure throughout all portions of the tract. In this discussion we are only interested in the inner or mucous coat.

The mucous membrane or mucosa of the gastro-intestinal canal contains four typical structures. First, an internal lining epithelium; second, a muscularis mucosa which forms the outermost layer; between these is number three, a tunica propria or corium of diffuse lymphoid areolar tissue which serves chiefly for the purpose of number four—the secreting glands.

The nature of the lining epithelium and the type of the glands differ in each succeeding portion of the canal and must, therefore, together with the other peculiarities of the several sub-divisions of the tract, be separately considered. The mucous membrane of the lower portion of the pharynx is lined by stratified squamous epithelium. All of these linings, of course, are supplied by blood vessels, lymphatics, nerves, etc., and contain many mucous secreting glands. The esophagus is ten inches in length and connects the pharynx with the cardia of the stomach, and is lined by stratified squamous epithelium.

The stomach is lined with tall columnar epithelium and the whole membrane is thrown into a wavy fold which is closely packed with tubular secreting glands that open on the surface by wide, crypt-like ducts.

Though the character of these glands differs somewhat in various portions of the stomach, three varieties, according to their distribution, are known as the fundus, pyloric and cardiac glands. The fundus or peptic glands are found chiefly in the central portion of the stomach and their functions are numerous and varied. The pyloric glands differ somewhat from their predecessor. The cardiac glands occupy a very small portion of the cardiac end of the stomach and they form a transition from the esophagus to the numerous fundus glands of the stomach. They possess peculiarities of construction and function.

The small intestines connecting the pylorus with the colon is twenty-four feet in length and is divided into three segments: the duodenum, eleven inches in length, with the common duct emptying into it; the jejunum, about nine feet, and the ileum, fourteen feet. The duodenum has a diameter of about two inches, but the canal gradually decreases in size until it is a little over one inch at the ileum.

The mucous membrane of the small intestine is studded with numerous intestinal villi, which are covered with tall columnar epithelium containing many mucous secreting goblet cells. There are numerous isolated nodules which are known as Peyer's patches. Solitary nodules with their characteristic lining occur throughout both the large and small intestine, but, as one will recall, Peyer's patches are only found in the small intestine and are most numerous in the upper portion of the ileum.

The large intestines includes the cecum, the colon —ascending, transverse, and descending portions— and the rectum. It measures about five feet in length. It connects the ileum with the anus. The vermiform appendix represents an atrophic vestige of the terminal portion of the embryonic cecum.

It would be difficult, indeed, to find a more striking example of disease being grafted on a tissue undergoing transition from one type of cell to another than is found in the frequency of disease of the vermiform appendix. The lining epithelium of the large intestine is of the simple columnar variety. The glands in this area are both columnar and goblet cells. In the rectum the lining epithelium is continuous at the anus with the stratified squamous epithelium of the skin. Lymphoid tissue abounds in the rectal mucous membrane. The glands are less numerous but are larger than in the colon portion. In the lower portion of the rectum the mucosa

is thrown into a number of longitudinal folds, the rectal columns, at which level the columnar epithelium changes to the stratified squamous type which gradually blends into the epidermis of the skin around the anus, analogous to that of the oral cavity.

So much for a brief resumé of the structural characteristics of the developments of the inner structure of the gastro-intestinal tract. With the foregoing in mind, let us discuss for a moment the significance of these changes.

As has previously been mentioned, it will be readily seen that the particular area that coincides with the transition of one type of cell into another is a fertile field for infection or disease. It is readily seen that the change of one type of cell to another also produces a chemical and physiological change in the fluids and substances of that particular area. The chemical and physiological reactions in different segments are striking and consistent in the normal bowel, and in the author's opinion strikes at the fundamental basis of disease. If one would compare the connecting joints, so to speak, of the gastro-intestinal canal with similar connections of a sewer or heating system, he will readily perceive that the joints where different segments are connected are the first to decay or start trouble. The gradual blending of the hard epidermis of the lip into the soft delicate mucous membrane of the mouth, is a beautiful piece of nature's welding of a more or less hard, resisting substance to a very soft, delicate membrane, covered with layers of stratified squamous epithelium which begins at the margin of the lips and continues with a gradual transition and fusing with the lining of the epithelium of the faucial isthmus and the pharynx. At this joint we have the interposition of lymphatic tissue forming the tonsils and adenoid tissue. This stratified squamous lining is continuous up to the alveoli projections which surround the teeth. Therefore, disease is common in this area. The accessory sinuses undergoing similar changes are also very prone to infection with their sequlae.

At the junction of the pharynx with the esophagus, there is a transition of one type of cell into another, though the esophagus is relatively free from disease with the exception of varicosities, cancer and syphilis.

At the junction of the esophagus with the cardiac end of the stomach, one encounters marked difference in cell construction, and, consequently, more chemical and physiological activity.

Entering the cardiac end of the stomach various degrees and types of gastritis, regardless of their cause, always produce profound symptoms of indigestion that manifest themselves in various and divers ways, of which, probably the most freqpent, is alteration of the chemical contents of the stomach, producing physiological changes of significance.

As the pyloric end of the stomach is approached, one not only finds a marked transition of cells but even more marked chemical changes, producing striking physiological conditions. The pyloric end of the stomach is a particular fertile field for disease beginning with the congenital stenosis in the newborn, through the various ages, ending with cancer of the stomach in the aged. The marked contrast of cell construction and chemical reaction found in the duodenum makes it probably the most frequent site of inflammation producing the sypmtom of indigestion.

As has frequently been stated, the palmar surface of the hand placed in the right upper quadrant will cover four-fifths of the diseases of the abdomen, all of which produce the symptom under discussion.

The ampulla of Vater, emptying all of the waste products, infections, and drainage from the liver through its various ducts, makes duodenitis in this area very conspicuous. Being external, though directly connected with the liver and its various ducts emptying into the gall-bladder and through the common duct directly into the gastro-intestinal canal, it causes hepatic disease, in the author's opinion, to be the greatest single factor in the production of diseases causing indigestion. Dilatation of the duodenum, ileum or jejunum produces various degrees of gastro-intestinal disturbances, manifesting themselves through migraine or other dysfunctions in the gastro-intestinal system.

Descending to the ileocecal region, the appendix in its various stages of pathology, due to its peculiar situation and other characteristics, is probably second in frequency among other organs in this tube as a cause of indigestion.

Diverticulitis, colitis, foreign bodies and visceroptosis in varying degrees present individual problems which have to be considered.

Hemorrhoids, adhesions, tumors, etc., through their external influences produce changes in the canal proper and have to be eliminated. Volvulus,

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intussusception, lead poisoning, typhoid or paratyphoid, various diseases of the pancreas, fissure, abscess formation, diseases of metabolism, improper food, endocrine disturbances, cardio-spasms, pyloric spasms, intestinal obstruction, congenital abnormalities, embolic or thrombotic ulceration, influenza, tularemia, pellagra, dehydration, intestinal parasites, gastric crisis in tabes, tumors, syphilis, tuberculosis, chemical irritants, insufficient sleep, insufficient exercise, drug addicts, emotion, fatigue, grief and alcohol may each play a distinct part and serve as a disturbing factor—causing the symptom under discussion.

Among diseases external to the gastro-intestinal tract that should be mentioned are tumors, injuries or other changes within the cerebrum or spinal cord, and various nervous manifestations in general. Tumors of the mediastinum and various forms of goiter frequently give indigestion as their first symptom. Various lung diseases, especially tuberculosis, are prominent as etiological factors.

In recent years food sensitization from an allergic standpoint has been greatly increased, or we are finding out more about it. There are a number of foods that come under this group, but onions, milk and cabbage seem to head the list.

Cardiac involvement, especially of the decompensation type, is almost always manifested by symptoms of indigestion. Pelvic pathology and menstrual disorders in general are frequent offenders, as also infections of the genito-urinary tract. Syphilis plays a prominent part as well as a great number of other conditions—too numerous to mention in a paper of this nature.

As to so-called functional disorders, there exists serious doubt in the opinion of the essayist whether or not any disease has a functional basis. What is a functional disease? Our forefathers called pulmonary tuberculosis and other conditions functional in origin, but for most of these we now have a definitely known etiological factor. So, isn't it reasonable to assume that future generations will discover causes for diseases which up to this moment are unknown to us? This classification is only mentioned in order to discredit so-called functional disease as a distinct group; at the same time the writer suggests that, instead of using the term functional, we label those cases as at present undetermined.

After a thorough study of the various diseases peculiar to the gastro-intestinal tract that give indigestion as a prominent symptom, it will be found in the great majority of incidents, that they have their origin in the particular location that coincides with the transition of one type of cell into another. Frequently this transition is the cause for other chemical and physiological changes, though quite often one or several different causative factors will be found in the same individual, and at points different from the transition of cells. Therefore, it is needless to say, all of them must be irradicated if the cure is to be effective.

No attempt has been made in this paper to diagnose any particular cause of disease producing indigestion but an effort has been made to divide the causes into those occurring in the gastro-intestinal tract, and a few of those conditions occurring in organs situated outside of the gastro-intestinal tract by either directly or indirectly influencing the normal physiological function of the canal. And, further, attention has been called to the erroneous idea by which we at times label conditions as functional, when we do not know the cause, whereas it is likely more careful study and future investigations will definitely establish their etiological status.

SUMMARY

1. As stated in the beginning, regardless of the time spent it would be practically impossible to mention and elaborate on the causes of indigestion.

2. An attempt has been made to establish two distinct classifications as to cause—first, those conditions arising in the gastro-intestinal tract proper or immediately adjacent thereto, and, second, those conditions external to the gastro-intestinal tract by either directly or indirectly altering its normal function.

3. A third classification is mentioned more to discredit it than otherwise, but at the same time to urge that the so-called functional diseases be labeled undetermined at present.

4. An attempt has been made to call your attention to the fact that the most frequent site of disease in the gastro-intestinal tract is at a point where there is a gradual transition of one type of cell into another type of cell, chemical and physiological abnormalities resulting.

5. There has been no discussion as to the *treatment* of the causes of indigestion but simply a brief outline as to the *causes*.

Medical Arts Building.

EMERGENCY MINOR SURGERY.*

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The advent of fast transportation has brought emergency surgery to every doctor. The epidemic of automobile accidents has made every practitioner, willing or not, a surgeon at some time or other. Because the average doctor, some distance from a hospital, is usually not prepared and more often not rewarded, and because of litigation and medico-legal angles, he accepts these cases unwillingly.

Recently I read the comments of a leading traumatic surgeon of New York City, who said: "There is no reason why the physician should not continue to be the good samaritan: in those ancient days the mode of transportation was the ass and the treatment was oil; instead the doctor now is the patient quadruped and the healing oil is sold by the gallon at filling stations."

How can we equip ourselves to deal with this problem in a more satisfactory manner? Minor surgery, or more specifically, emergency minor surgery is the answer.

1. *Wounds.*—Because of the suddenness of onset there is no defense barrier and because of traumatized tissue, bacteria can grow and spread rapidly. Proper treatment of wounds within four to six hours, and before the organisms can multiply, effects the best results. The doctor who sees the patient just after the accident can, therefore, get the best results provided his care of the wound is thorough and not merely first aid treatment.

Every wound not made under aseptic conditions should be considered contaminated and if over twelve or twenty-four hours old, infected.

If anesthetized, the wound can be exposed to its depths, foreign bodies and traumatized tissue removed and hemorrhage controlled. It is easy to say prepare the surrounding skin and inject novocain, but how few of the average doctors have the properly equipped office to do this! We have found it much easier to gently clean the skin and the wound with green soap and sterile water and then pack with a piece of cottton saturated in 10 cent cocaine or 1 per cent nupercain solution. When anesthetized thus, the torn edges can be judiciously trimmed, traumatized tissue removed and the depths of the wound explored and gently flooded with one of the dye antiseptics. Any bleeeding points can be tied off with fine catgut. A small drain, either of rubber or a few twisted strands of catgut, may be left in and the wound loosely sutured. Let me say at this point that it is useless to trim away necrotic tissue and then produce a great deal more necrosis by flooding an open wound with a very strong and irritating antiseptic, filling up the wound with a great quantity of heavy catgut material, or tying off a large piece of tissue in a mass ligature. Such treatment would necessarily produce more harm than the original trauma.

Skin clips for closing the wound margins are definitely advantageous because they can be adjusted much more carefully, because they very nicely control the oozing in the skin, and because their application is almost painless. We have used a thumb forcep with small teeth to hold the skin margins together while applying the clips. Clips should be removed in four to six days and leave no scars. Small strips of adhesive replace them for a few days to prevent too much tension on the healing wound. Where the wound is deep, several deep sutures are necessary to avoid leaving free space in which blood or serum may accumulate. After closure, a firm, tight-fitting dressing must be applied and the part immobilized. Such wounds heal by first intention.

Badly contused and lacerated wounds can be treated likewise. The sutures are placed but not tied until the second or third day. They require a large sterile dressing and immobilization. In such a manner massive infection and cellulitis can usually be prevented in lacerated and frankly infected wounds. Wet dressings, frequently changed, aseptically, are life saving in these cases. We use a large wet dressing covered with waxed paper or oiled silk to keep it moist. Saline or magnesium sulphate are undoubtedly the best solutions, when used for more than forty-eight hours. We have found 1 per cent carbolic or aluminum acetate solu-

*Read before the Physicians' Journal Club of the Eastern Shore of Virginia, May 14, 1935.

tion most beneficial in treating lacerated wounds for the first twenty-four or forty-eight hours.

Don't forget tetanus antitoxin must be given early where there has been any soil contamination.

2. *Infections and Infected Wounds.*—These rightfully come into this general discussion, not only because they are frequently of an emergency grade but also because improper treatment often leads to disastrous results. Cellulitis and lymphangitis are commonly encountered.

Absolute rest and large hot wet dressings are now generally conceded to be the most effective therapy. This form of treatment should be continued until the infection subsides or forms a localized abscess.

Let me stress the dangers of carbuncles and pustules of the face. Drainage around the nose and upper lip (by way of veins without valves) leads directly into the cavernous sinus. Infections of this region have to be carefully treated to prevent extension into this sinus followed by a sure sinus thrombosis with meningitis and septicemia. Moist heat and absolute rest is the treatment. Rest of the facial muscles must be obtained even to bandaging the face so they cannot chew or talk. Surgery here should consist only of picking off the top of a pustule. We have had to ligate the angular vein running up the nose in order to prevent an impending cavernous sinus thrombosis.

Localized, deep infections may be opened and drained, but care must be taken not to break down the inflammatory wall that surrounds them. Packing loosely with rubber dam drainage material and continuous hot moist dressings are excellent treatment. The Dakin irrigations are most effective where there is much sloughing or necrosis of tissue. For this small tubes are inserted into the wound and Dakin's solution injected every two hours.

Infections of the distal phalanx of the finger or felons, after localization, are best opened by a wide horseshoe incision, about ¼ inch below the nail and carried down to the bone. Seldom is it necessary to open more than one side of this horseshoe. Often when osteomyelitis has set in, a small piece of necrotic bone is found and this will sequestrate in a few weeks and resolution will take place without any further extension of the bone infection. Incisions into localized pus in the proximal phalanges are best made on the lateral sides.

Careful watch must be kept for tendon sheath involvement. Where there is pus in the sheath, there is always tenderness all along the finger and the gentlest extension causes pain. Even when well localized, tendon infections of finger, hand or arm should be drained by an experienced surgeon in order to prevent loss of function.

Adenitis, enlarged tender lymph nodes, should not be incised and drained unless fluctuation shows pus to be present. Rather treat the original infection and these nodes will usually heal up of their own accord.

Boils and carbuncles, in my estimation, ought to be well localized by rest, heat, and large dry dressings before they are incised. Infra-red light treatment is very beneficial in localizing the pus. Plunging a needle or toothpick, dipped in pure phenol into the center of the infected area is a well vouched-for treatment.

3. *Burns.*—Extensive burns necessarily demand hospitalization because of the shock and toxicity. Third degree burns are handled best by an experienced surgeon in a well-equipped hospital. However, the first aid treatment of these severe burns will materially help in their recovery. In our hands, some of the water soluble tannic acid jellies have been most effective. They can be applied as first aid and then be easily removed if the surgeon needs to do any further local treatment.

4. *Joints.*—Sprains should be treated by firm support and early mobilization. Synovitis of the knee calls for early aspiration by one well acquainted with the technique.

Dislocations can be reduced much more easily soon after the accident. After their reduction, the joint should be well supported and early motion begun. Watch for the possibility of an associated fracture; it often occurs.

Any wounds opening into a joint belong in the hands of a competent surgeon. An adequate arthrotomy is usually necessary to prevent a suppurative arthritis.

5. *Nerves and Tendons.*—Repair of divided nerves and tendons is a major surgical operation. Such a wound, unless seen early and in an uncontaminated condition, should be carefully treated as a simple wound and loosely sutured to prevent contamination or spread of infection up the tendon sheaths. After the wound is well healed and free of infection, a secondary repair can be done to the nerves and tendons. The best time is about three

weeks after healing, provided there was no infection. Wait three to twelve months in infected cases.

6. *Fractures.*—Most fractures should be reduced early, soon after they occur. Splint them well and *then* send to the hospital for X-ray and further care. Many minor fractures do not need this. Such treatment would prevent much of the swelling and laceration of tissue produced by the over-lapping fragments of the broken bone.

Local anesthesia is a great help in reduction provided it is used within twelve hours. Twenty c.c. of a 2 per cent solution of novocain, injected between the fragments, will give excellent anesthesia of the break. This must be carried out under very rigid antisepsis or an osteomyelitis might be produced. The tip of the needle is inserted between the fragments and its position proved by the aspiration of bloody fluid.

After reduction, it is often difficult to keep the fracture reduced. We have found that skin tight plaster splints, made of six or eight thicknesses of plaster bandage, and molded to the part are very helpful. These usually cover two sides of the limb and are held in place by a gauze bandage, applied while they are still wet.

In fractures of the humerus and tibia, the early application of a Thomas splint and traction will allow safe transportation and prevent muscular contractions. The ring of the Thomas splint fits tight around the shoulder or hip and traction is made on the hand or foot. The limb must be well supported between the bars of the splint. This early application of traction materially shortens the time of recovery in these difficult fractures. Could I but impress you with this point alone, my efforts would not have been in vain.

Compound fractures, because of the danger of osteomyelitis, are as much an emergency surgical procedure as acute appendicitis. We believe the best results can be obtained only by early operation in a well-equipped hospital and followed by thorough after treatment. When first seen, prompt antisepsis only, without any attempt at reduction should be practiced, unless the doctor is equipped to do an open reduction and debridement.

7. *Shock.*—This is an emergency that we all have difficulties with. Following trauma, it is usually a disturbance of functional equilibrium, with such marked depression that it may become fatal. "The earlier the treatment, the better the prognosis," has been quoted many times. Application of heat, lowering the head, absolute rest and hypodermics of morphine are known only too well to all of us. Treatment of the causative factor, whether it be a ruptured spleen or internal hemorrhage can only be done in a hospital. Concentrated glucose solution, given intravenously, early in shock, is an extremely important therapeutic agent. The preparations of 50 c.c. ampules of 50 per cent glucose solution already buffered by the addition of an alkali, have put this important agent in every doctor's hands. We should all be able to give an intravenous injection of this nature. The technique is simple and easily acquired. A 50 c.c. syringe with a fine needle is used and the solution given in one of the veins at the elbow. Normal saline can be given under the skin but requires a more complicated apparatus and fresh preparations of sterile saline. Used early in shock, these are often life-saving methods.

Conclusions.—In a rambling sort of fashion, I have tried to review for you certain principles of minor surgery that can be used effectively by every doctor, not only to his own satisfaction, but also to the great benefit of the patient that he has been called to see soon after an accident. Most of these methods are known to all of you, but more efficient application of them will make you feel less like the patient quadruped and more like the good samaritan.

BIBLIOGRAPHY

Moorhead: Traumatic Surgery, *Journal A. M. A.*, Vol. 96, No. 15, p. 1191.

Koch: Traumatic Surgery of Nerves and Tendons of Hand, *S. G. and O.*, January, 1933, p. 1.

Gamble: Infections and Carbuncles of Face and Lips, *Sou. Surgeon*, March, 1933.

Saltzstein: Treatment of Minor Infections, *A. J. of Surg.*, September, 1933, p. 358.

Saltzstein: Scope of Minor Operations, *A. J. of Surg.*, 1934, p. 281.

Newell: Treatment of Sterile, Contaminated and Infected Wounds, *S. Med. J.*, January, 1934, p. 53.

Koch: Acute Rapidly Spreading Infection of Hand, *S. G. and O.*, September, 1934, p. 277.

712 Botetourt Street.

TRAUMATIC CYANOSIS IN THE NEWBORN.*

WALTER McMANN, M. D.,
Danville, Va.

B. R., gravida 1, para 0, age 22, was delivered of a premature baby September 11, 1934. The estimated date for confinement was November 11, 1934, giving the infant an age of approximately twenty-eight weeks. The duration of labor cannot be stated definitely because of the vague and ambiguous history given, but it was in all probability long. When admitted to the emergency room the cervix was completely dilated, at which time the membranes were ruptured. Presentation was vertex with the head well flexed. Delivery was spontaneous approximately one hour later. No cord was around the neck. The fetal heart tones were of good quality during the labor—rate 140.

The baby was in poor condition. The most striking feature was the intense purplish black discoloration of the face, neck and scalp with some scattered petechial hemorrhages. No other part of the body was cyanotic. As in a case reported by Telfair and Gaines,[1] administration of carbon dioxide and oxygen caused a glowing of all parts of the body except the discolored areas. The child lived a little over twelve hours. The cause of death was prematurity.

Necropsy was performed by Dr. Aaron S. Price, pathologist to the hospital. "There was marked cyanosis of the neck and face, while the remainder of the body was pallid. The skull was opened and there were no pathological findings except for subaponeurotic ecchymosis. There was meningeal and cerebral edema. There were no tentorial lacerations, and no evidence of intracranial hemorrhage or of a tumor." There was little congestion in the lungs. The foramen ovale was patent. A dissection of the neck revealed no congenital anomalies of the blood vessels.

Telfair and Gaines report a case similar to this one. Theirs was a ten-pound child delivered from a para 7. In delivering the shoulders some difficulty was encountered. There was no laceration of the perineum or vagina. The clinical picture was the same as that cited above, except that there was some cyanosis of the extremities and necropsy revealed a subtentorial hemorrhage. Their case is classified as traumatic cyanosis.

Sahler[2] (1929) observed several cases of transient cyanosis of the face, arms and thorax in the newly born. Because of a broad shadow in the region of the right auricle on fluoroscopic examination, he assumes the presence of some obstruction to the superior vena cava. This assumption seems to us to be hardly tenable.

Traumatic asphyxia is quite rare. It is a localized cyanosis of the face and neck, usually following compression upon the thorax, sometimes the abdomen. One sees it in those cases that have been trampled on in panics or when the victim is crushed between two firm bodies. Telfair and Gaines have very probably reported the first case as a complication of labor.

We are rather inclined towards the viewpoint of Laird and Borman[3] and would make a differentiation between traumatic asphyxia and traumatic cyanosis. The latter is caused by intense, sustained, local trauma. We think there is hardly enough compression of the chest wall to cause traumatic asphyxia in a three-pound baby during a normal delivery. Rather would we attribute the cyanosis to the trauma of a one hour second stage of labor with ruptured membranes. This would classify the case we report as one of traumatic cyanosis.

The findings of a congenital heart lesion may, in the minds of some, nullify our premise.[4] In infants with congenital heart lesions there is sometimes cyanosis of the lips, nares, and ears (Osler) but not of the whole head. Cyanosis in the newborn, concomitant with congenital cardiac lesions, is either over the whole body or in isolated patches.

SUMMARY

A case of traumatic cyanosis is reported.

The actual source of the trauma is hard to determine.

This is very probably one of the very few reported cases of traumatic cyanosis in the newborn.

*From the Obstetrical Service, New York Polyclinic Hospital.

I am indebted to Dr. Ross McPherson, deceased, for permission to report this case from his Service at the New York Polyclinic Hospital.

REFERENCES

1. Telfair, J. H., and Gaines, J. A.: Traumatic Cyanosis in the Newly Born, *Am. J. Obst. and Gynec.*, 29: 125-126, January, 1935.
2. Sahler, J.: Cyanosis of the Face and Arms in the Newly Born, *Wien. Klin. Wchnschr.*, 42:622, May 2, 1929.
3. Laird, William R. and Borman, Milton C: Traumatic Asphyxia, *Surg., Gynec. and Obst.*, 50:578, 1930.
4. Price, Aaron S.: Pathologist, N. Y. Polyclinic Hosp. Personal Conversations.

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Public Health Statistics

I. C. RIGGIN, M. D.
State Health Commissioner of Virginia

The communicable disease reports received at the office of Dr. G. F. McGinnes, State Epidemiologist, for the month of December, 1935, show the following cases compared with the same month in 1934:

	1935	*1934*
Typhoid and Paratyphoid Fever	23	55
Diphtheria	161	252
Scarlet Fever	222	489
Measles	122	843
Meningitis	16	9
Poliomyelitis	3	2
Rocky Mountain Spotted Fever	2	0
Typhus Fever	0	0
Undulant Fever	2	4
Tularaemia	27	23
Smallpox	0	16

Tentative figures of the number of cases of certain diseases reported to the Virginia State Department of Health for the calendar year of 1935 have been compiled. The following table shows the number reported from January 1 through December 31, 1935, compared with 1934 and with the average number per year for the preceding five years (1930-1934):

	1935	*1934*	*5-yr. Aver. (1930-4)*
Typhoid and Paratyphoid Fever	735	777	1,182
Diarrhea and Dysentery	3,592	4,241	6,278
Measles	18,216	29,589	15,132
Scarlet Fever	2,116	3,034	3,286
Diphtheria	1,432	1,989	2,652
Poliomyelitis	679	85	76
Meningitis	251	115	101
Tularaemia	87	57	69
Pellagra	148	234	510
Syphilis	5,205	5,725	5,214*
Gonorrhea	3,386	3,497	3,194*
Rocky Mountain Spotted Fever	39	47	21
Typhus Fever	8	5	22
Undulant Fever	37	33	32
Smallpox	10	31	89

While these figures are not final they do permit a fairly accurate analysis in regards to significant changes in prevalence of the various diseases shown.

The difference in the number of typhoid and paratyphoid and diarrhea and dysentery cases reported in 1935 compared with 1934 is small. It is noteworthy however, that there has been a gradual decline in the incidence of these diseases since 1931 and it is believed that with improved sanitation they will become less and less prevalent.

The reported cases of measles, while showing a decided decrease from 1934, are still above the five-year average. However, the change is not significant when the cyclic nature of this disease is considered.

The number of cases of scarlet fever is the lowest recorded for the State of Virginia since 1919 and nearly a thousand less than in any year during the past five. It is difficult to evaluate the meaning of this decrease.

There were 1,432 cases of diphtheria reported during 1935 which is 557 less than in 1934 and 1,220 less than the average for the preceding five years. This figure for 1935 represents the lowest number on record in Virginia. It well emphasizes the importance of diphtheria immunization and if the parents of Virginia will continue to have their physicians immunize their children between the ages of six and nine months the number of cases will continue to decrease.

The increase in the number of poliomyelitis cases caused by the unusual prevalence of this disease in Virginia from June through September, 1935, has hardly escaped recognition by physicians or the general public.

The increase in cerebrospinal meningitis is not as marked as it was with poliomyelitis and is attributed in part at least, to the concentration of men in C. C. C. and work relief camps.

Pellagra, which has been on the decline since its peak in 1930, is still on the downward slope and has reached a new low level in 1935. It is believed that the necessity of resorting to home grown fruits

*Reportable since July 1, 1932.

and vegetables for food during the past few years has been responsible at least in some measure for the decrease in the incidence of this disease.

The number of cases of syphilis and gonorrhea remain high and are roughly the same as in 1934.

Little of significance can be shown in the comparison of the other diseases listed.

Woman's Auxiliary to the Medical Society of Va.

President—MRS. FLETCHER J. WRIGHT, 49 S. Market St., Petersburg.

President-Elect—MRS. F. D. WILSON, 5352 Studley Ave., Norfolk.

Corresponding Secretary—MRS. MEADE EDMUNDS, Walnut Hill, Petersburg.

Recording Secretary—MRS. HAROLD W. POTTER, 70 33rd St., Newport News.

Treasurer—MRS. REUBEN F. SIMMS, 2502 Hawthorne Ave., Richmond.

Organization and *Hygeia*—Main Objectives for 1936.

The Auxiliary to the Medical Society of Virginia has two most important objectives for the year 1936—Organization and *Hygeia.*

In order to promote organization one must have "inspiration, education and cooperation," as cited by Mrs. Southgate Leigh, of Norfolk, at a recent meeting. Virginia women are particularly fortunate in having the first two requisites, and the third should not be a hard one to acquire. Our State has the honor of being one of the charter members of the National Auxiliary. Virginia is one of the leading medical centers of the South with its Medical College at Richmond, and its splendid Medical Department at the University of Virginia. Our doctors have gone far in the field of medicine. As wives, we want our husbands to be proud of us! As organized members of a Medical Auxiliary, our doctors will be proud of our achievements! Each local Auxiliary has its organization problems. There are probably groups of doctors' wives who would like to organize, but do not know how to proceed. No set rule can be applied to insure success in organization and increased membership. The old axiom "if at first you don't succeed, try, try again" is one of the best to work on. Mrs. F. D. Wilson, 5352 Studley Ave., Norfolk, Va., State Chairman of Organization, is ready to be of assistance at all times.

In writing of *Hygeia* in a recent issue of the *American Medical Association Bulletin,* the National Auxiliary President, Mrs. Rogers N. Herbert, says: "Since the secret of success is constancy of purpose, in planning for the year each Auxiliary must base its plan on our one great aim, which is to help promote Public Health Education by serving as intermediaries between the medical profession and the laity. The great foundation for all our health work is the promotion of the magazine, *Hygeia.*"

Hygeia is not a magazine which interests only those connected with the medical profession. It is published by the American Medical Association for the laity, and contains articles of interest for everyone, for young children as well as for persons of advanced years.

The Virginia Auxiliary has fallen far behind the other Auxiliaries in *Hygeia* subscriptions. Each member should consider herself a committee of one to secure her husband's renewal subscription and at least one additional subscription. If this can be done, 1936 will be a banner year for *Hygeia* in Virginia.

The Southern Medical Council's Report,

Read by the Chairman, Dr. Bloss, at a big public meeting in St. Louis, contained the following item concerning the Auxiliary:

"The Council recognizing that the Woman's Auxiliary is an important part of the Southern Medical Association, suggests that the Auxiliary have a complete reorganization, and along the lines of the Southern Medical Association. The wife, daughter, mother and unmarried sister automatically becomes a member of the Auxiliary *without dues.*

"In cases where the member has passed on, his widow can remain a member of the Auxiliary.

"The Auxiliary to budget its necessary expenses for officers and committee chairmen, and for the printing of minutes, bulletins, etc. This expense will be assumed by the Southern Medical Association.

"The Auxiliary projects to be inspirational, informative and constructive.

"The Auxiliary has the privilege of securing its own funds for its own projects."

Auxiliary to the Postgraduate Medical Society.

At a recent meeting, the Petersburg Auxiliary held its election of officers as follows:

President—Mrs. E. L. McGill; Vice-President—Mrs. E. J. Nixon; Treasurer—Mrs. W. B. McIlwaine; Secretary—Mrs. C. S. Dodd.

This Auxiliary voted to give fifteen six months' subscriptions of *Hygeia,* these to be placed in all Beauty Shops in the city, the white and colored Community Centers, and the Petersburg Hospital. It is the hope of this Auxiliary that these subscriptions will be continued after the six months has elapsed. It is suggested that this method might be used to material advantage throughout the State.

The Auxiliary to the Richmond Academy of Medicine

Had as its guest speaker at the January meeting Dr. R. Angus Nichols, Jr., who gave an interesting talk on gynecology. At this meeting Mrs. Charles P. Mangum was appointed Public Relations Chairman. On motion it was decided to investigate the advisability of offering a prize in the schools of Richmond for the best essay on Public Health, the first prize to be $3.00 and the second $2.00. If this contest is undertaken it should create a great deal of interest locally as well as throughout the State.

Radio Programs.

Remember the radio programs by the American Medical Association each Tuesday afternoon at 5:00 P. M., Eastern Standard Time, on a Coast-to-Coast Network of the National Broadcasting Company.

Truth About Medicine

In addition to the articles previously enumerated, the following have been accepted by the Council on Pharmacy and Chemistry of the American Medical Association:

Parke, Davis & Co.
Mapharsen
Ampoules Mapharsen 0.04 Gm.
Ampoules Mapharsen 0.06 Gm.
Ampoules Mapharsen 0.4 Gm.
Ampoules Mapharsen 0.6 Gm.

E. R. Squibb & Sons
Squibb Cod-Halibut Liver Oil.

The following product has been accepted for inclusion in the List of Articles and Brands Accepted by the Council But Not Described in N.N.R. (New and Nonofficial Remedies, 1935, p. 445):

The National Drug Co.
Smallpox Vaccine (Vaccine Virus).

Propaganda for Reform

The Eleventh Revision of the Pharmacopeia of the United States of America.—The Eleventh Revision of the Pharmacopeia is now at hand. The new Pharmacopeia follows the old one in style and general method of presentation. The progress of the revision may be measured in part by the deletions. The Revision Committee reports that 119 products have been deleted either because they had been superseded by better products pharmaceutically or medically or because their period of usefulness had expired in view of more modern methods of treatment. The new additions to the Pharmacopeia, of which there are fifty-eight, include Calcium Gluconate, Carbon Dioxide, Chiniofon Powder, Ephedrine and the Hydrochloride and Sulfate, Ethylene, Histamine Phosphate, Iodophthalein Soluble (Tetraiodophenolphthalein Sodium), Merbaphen, Mercuric Succinimide, Mild Tincture of Iodine, Neocinchophen and Parathyroid Solution. Thirty-nine of the new additions are already familiar to physicians in New and Nonofficial Remedies; sixteen are so well-established that they appear in Useful Drugs. Of course there are a number of drugs without which the physician cannot practice successfully which are not included in the Pharmacopeia. This is in accord with the recognized policy of the Pharmacopeia that monopolized substances are not admissible; thus, as long as there is a patent for insulin it cannot be admitted. There are also other drugs, such as certain mercurials, arsenic preparations and antiseptics, for which the physician will continue to rely on New and Nonofficial Remedies for his guidance. It would seem well, if an interim revision is issued, that a shorter acting barbiturate be included. For instance, pentobarbital sodium is a nonproprietary drug having the necessary short-acting attributes. Within the last two years the Committee on Revision in cooperation with the Board of Trustees of the United States Pharmacopeial Convention has initiated a practice of issuing an "interim revision." This has now become an established policy. It has the advantages of early correction of serious mistakes and the necessity of making products conform with new manufacturing processes. However, it has the decided drawback of requiring the physician to keep constantly in mind any possible changes which the Committee may issue affecting prescription practice and may easily become a hardship on manufacturers. It is hoped, therefore, that these revisions will be issued most conservatively. The nomenclature used in certain instances in the new Pharmacopeia is unfortunate. For instance, physicians are asked to prescribe "Theophylline with Ethylene Diamine," when there was already available to the Pharmacopeia the nonproprietary name Aminophylline. The Pharmacopeia has also included the cumbersome term of the British Pharmacopeial Commission, "Solution of Irradiated Ergosterol," when the non-

proprietary name "Viosterol in Oil" would have been much simpler. In the interest of the medical profession *The Journal* will continue to use the terms Aminophylline and Viosterol in Oil. As has so often been said, common usage establishes a name. Seldom did one use the word "Gluside" in prescribing saccharin, so the Pharmacopeia has reverted to the old term "Saccharin." Names and standards for the ten newly admitted biologicals (a Typhoid, a Typhoid-Paratyphoid and Rabies Vaccines; Scarlet Fever Streptococcus Toxin and the Antitoxin; Diphtheria Toxoid and the Toxin for Schick Test; Antipneumococcic (Type I) and Antimeningococcic Serums and Old Tuberculin) were provided by the National Institute of Health. A subcommittee on vitamins, responsible for the Interim Revision of Cod-Liver Oil, will oversee standards on this vitamin A and D containing substance. The International Units of vitamins A and D and digitalis have become the official U.S.P. units, with some modifications. It is interesting to note the description of liver and stomach preparations. Here no standards are given, but the Pharmacopeia endeavors to control these products with the following statement: "This Board will indicate liver and stomach preparations which are of Pharmacopeial quality—as indicated by submitted clinical data." For the most part the latest addition of the Pharmacopeia is indeed a credit to the Revision Committee. *The Journal* and the Council on Pharmacy and Chemistry have consistently urged that physicians prescribe official preparations whenever possible. (*J. A. M. A.*, December 21, 1935, p. 2074.)

Gold Therapy in Arthritis.—The use of gold as a remedy is not new. The value of the metal has always conferred upon it possibilities for symbolic and suggestive therapy. Recently, however, gold has been used seriously and extensively. Major attention has been directed toward its use in tuberculosis of various forms, asthma, arthritis and certain skin diseases. The precise way in which gold acts is not known. It seems improbable that, in vivo, gold has any direct action on organisms. It has been suggested that it may act by "stimulating some defense forces in the patient." most probably the cells of the reticulo-endothelial system. Such an action is similar to that of nonspecific proteins. Although scientific reports on gold therapy are infrequent in the domestic literature, several recent reports have appeared in continental and British journals, especially with reference to its use in rheumatoid arthritis. Thus there is now a considerable amount of independent work indicating the therapeutic effectiveness of gold salts in rheumatoid arthritis. The best preparation, mode of administration and dosage are not a matter of general agreement. However, all reports are in agreement on the toxicity of gold compounds. Erythematous and even exfoliative dermatitis may be observed. Nephritis with albuminuria, edema and sometimes raised blood urea may occur. A tendency to bronchial irritation has been noted. Shock and collapse occurring immediately after an injection have been reported. Pyrexia has been reported and is probably more frequent when an intravenous preparation is used. Stomatitis and diarrhea sometimes occur. Isolated cases of hyperkeratosis of the soles, pustular dermatitis of the hands and feet, labial edema, herpes zoster, erythema nodosum, lichen planus and purpura have been noted. The conservative attitude that must still be taken in the use of gold preparations is indicated by the fact that the Council on Pharmacy and Chemistry has not yet accepted any therapeutic gold preparation with claims of usefulness in arthritis. It seems that aurotherapy is promising in a restricted field when some of the doubtful factors become clear and the necessary precautions against toxic reactions standardized. At the present time no one who is not thoroughly familiar with the indications and dangers should attempt its use. (*J. A. M. A.*, December 28, 1935, p. 2163.)

The National Formulary VI.—When Congress created the Food and Drugs Act in 1906 it included as official standards for the purpose of the act not only the United States Pharmacopeia but also the National Formulary, a book published by the American Pharmaceutical Association. The National Formulary was characterized as a standard only for those preparations which are not provided for by the United States Pharmacopeia. The Sixth Revision which is now available, is superior to previous issues in that it follows the style of the Pharmacopeia rather than being divided into three sections. Eighty of the 119 articles omitted from the Pharmacopeia have been incorporated in this volume. There are 150 other admissions and 319 deletions. The largest single group addition is the Ampoules, some containing certain new and old Pharmacopeial items. The National Formulary lists certain types of tablets but, unlike its predecessor, does not prescribe as rigorous standards for the preparations. Essentially, any size tablet of the preparation described in the National Formulary now becomes official. It is interesting to note also that glandular preparations have been included in the National Formulary, but it must be admitted that there is no evidence of the value of some of these preparations given orally. The sincerity of the Committee that has charge of this work is recognized, but the National Formulary still seems to be a superfluous publication. There should be only one book of official standards for medicinal preparations published in the United States. (*J. A. M. A.*, December 28, 1935, p. 2164.)

Book Announcements

The Parathyroids in Health and in Disease. By DAVID H. SHELLING, B.Sc., M. D., The Johns Hopkins University and Hospital, Baltimore. The C. V. Mosby Company, St. Louis, Mo. 1935. Octavo of 335 pages. Illustrated. Cloth. Price, $5.00.

This book, which the author in his preface modestly styles a monograph, reminds one of Dr. Cushing's epochal work on the pituitary published in 1913, even though the subject of the parathyroids

is not as large a one nor possibly as important as the pituitary.

It is really a pleasure to review a book about which one can make no criticism. The whole work is admirably arranged with full bibliography of each chapter and is as adequate as a treatise on this subject at the present time could be. The history, pathology, symptoms, and manifestations are wisely expounded. The relation of the parathyroid to calcium and phosphorous metabalism is shown in excellent metabolic linkage. The various means of overcoming hypo and hyper parathyroidism are sanely discussed and bring us up squarely to the present time. The relationship of parathyroid disease to von Recklinghausen's disease and other conditions is definitely explained. Many important things are pointed out as, for instance, the retention of blood phosphates in cases in which there is a decreased blood calcium. The whole book is scientific and at the same time readable, practical and helpful. It would be of definite service to medicine if each endocrine gland could be treated in the same manner in which the parathyroids are in this work. The writer unhesitatingly advises every physician interested in any phase of endocrinology to read Dr. Shelling's book and read it carefully.

BEVERLEY R. TUCKER, M. D.

Immunology. By NOBLE PIERCE SHERWOOD, Ph.D., M. D., Professor of Bacteriology, University of Kansas, and Pathologist to the Lawrence Memorial Hospital, Lawrence, Kans. St. Louis. The C. V. Mosby Company. 1935. Illustrated. Octavo of 608 pages. Cloth. Price, $6.00.

Professor Sherwood has been engaged many years in the effort to impart this general field of knowledge to college and medical students. He and his colleagues have accumulated a mass of notes from historic and current sources which have served as a basis for lecture and laboratory exercise. These have now been assembled and made available in book form.

Into five hundred and seventy pages of text have been compressed a most thorough and industrious compilation of definitions, theories, inferences, observations, and technical procedures culled from all fields of science, which have, or may have, or may have had a bearing upon the general field of immunology. The treatment is necessarily cryptic and topical in character, but to each chapter is appended a long list of references, and to these sometimes are added "Additional" or "Supplementary" references.

One is inclined to wish that the author, with the maturity of long experience, had exerted his critical faculty to a greater degree in shortening or entirely eliminating the consideration of theories and interpretations, once perhaps useful, now outgrown. This text has not avoided the common fault of preserving much that is useless along with that which is of proved value, nor is it free from what are at times annoying errors. From the point of view of a detailed and accurate discussion of the problems of infection and resistance it leaves much to be desired. As a sort of encyclopoedia of laboratory immunology it is quite valuable.

KENNETH F. MAXCY, M. D.

Library Books Available to Members.

The following are some of the newer books in the Library of the Medical College of Virginia, Richmond, available to Virginia doctors, the only cost being return postage:

Lythgoe, R. J.—Illumination and visual capacities.
McComas—In ghosts I have talked with.
Mackay, H. M. M., et als.—Nutritional anemia in infancy.
MacLaurin, C.—Post-mortem.
McLester—Nutrition and diet.
Macphee, G. G.—Studies in the etiology of dental caries.
Marett, R. R.—Head, heart and hands in human evolution.
Mawson, C. O. S.—Dictionary of foreign terms found in English and American writings of yesterday and today.
Micks, R. H.—The essentials of materia medica, pharmacology and therapeutics.
Miller, W. C.—Black's veterinary dictionary.
Mönnig, H. O.—Veterinary helminthology and entomology.
Mummery, J. H.—The structure of teeth in relation to dental disease.
Newsholme, Sir A.—Fifty years in public health.
Nicolau & Galloway—Borna disease and enzoötic encephalo-myelitis of sheep and cattle.
O'Gorman, C. M.—Bringing science into the road traffic problem.
Onchocerciasis, with special reference to the Central American form of the disease by R. P. Strong, et als. In 4 parts.
Palgrave, R. H. I.—Dictionary of political economy.
Pope & Young—The art and principles of nursing.
Prinz & Greenbaum—Diseases of the mouth and their treatment. New edition.
Pyke, R. L.—The legibility of print.
Rand & Sweeney & Vincent—Growth and development of the young child.

Virginia Medical Monthly

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Editorial

The General Assembly and Medicine.

In pursuit of the purpose of the VIRGINIA MEDICAL MONTHLY to further every move in the direction of placing all medical matters in the State of Virginia under the supervision of medical men and to make the Medical Society of Virginia morally and politically as powerful in this State as it ought to be, we take pleasure in publishing the following observations of Dr. Beverley R. Tucker.

> Again that historic body, the General Assembly of Virginia, meets. Again come up before this assembly important medical matters that affect every practitioner in the State. Again the medical profession of the State of Virginia should unhesitatingly express itself upon some of these matters that appear to be detrimental to the medical profession and that invade its inherent rights.
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> Probably the most important medical question facing the people today is the proper direction of that branch of medicine known as psychiatry. No longer can the physician outside of this specialty conscientiously say, "I know nothing about it and care less." No longer can the profession sit supinely by and let legislation be enacted detrimental to the proper advancement of psychiatry without raising its voice.
>
> Two matters will probably come up before the present legislature. If it is true that there has been a recommendation by the Governor for a rather large sum of money to be spent for the further elaboration of the so-called private sanatorium in connection with the Western State Hospital, it would set up not only class feeling but class legislation within a single State institution. But in the present status of the State's finances, or in fact in any status, this appropriation should not be made to this sanatorium. If the State has extra money to spend on psychiatry in this institution, would it not be just and wise to give it to the main institution for the indigent insane for better medical attention rather than to the small pay sanatorium on top of the hill at which those confined in the large hospital must look with envious eyes?
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> Another matter that it is understood will come up is the recommendation that the large general hospital board be done away with and a board of five or six be in control of all of the hospitals. This is a most excellent provision, provided that the five or six are not political appointments and further provided that at least two physicians, one of them a trained psychiatrist. be on this small board. The Richmond Academy of Medicine has passed a resolution to this effect. The management

of the State insane is a difficult problem at best and without the aid and help of those trained in psychiatry, how could such a board function properly?

What is Happening in Neuropsychiatry.

Stanley Cobb's review of neuropsychiatry in the last issue of the *Archives of Internal Medicine* seems to us so good that we believe a summary of his summary might serve a useful purpose. From the mass of material the reviewer has boiled down to a few pages, one is convinced that neuropsychiatry is not a static specialty. He begins by presenting the evidence to show that it is becoming old fashioned to speak of functional diseases, that in the words of Jelliffe, somatic changes are either reversible or irreversible, and that many so-called organic lesions may in reality have psychogenic origins.

Equally momentous implications lie in the discovery that certain humeral agents may be responsible for the transmission of nervous activity from nerves to muscles. One such agent, effective as a vagal stimulus, has been identified by Sir Henry Dale as almost certainly acetyl chloline. Another has been described by W. B. Cannon as operative upon the sympathetic nervous system and named by him sympathin.

The reviewer next turns to the myopathies and takes courage from the fact that some order seems to be emerging from the chaos of these syndromes. He discusses the application of the radio amplifier and the oscillograph to the technique of neurophysiology and shows that the electro-encephalograms—as the records of minute changes in electrical potential in the brain are called—have demonstrated wave-like changes in voltage. The character of these brain waves appears to vary over various parts of the cerebral hemispheres and to be modified by sleep, drugs and anaesthesia. The very complexity of the brain appears to limit the practical application of such instruments to the study of disease.

Epilepsy came to the front during 1935 as probably the most thoroughly discussed psychiatric disturbance of the year. It is becoming more apparent that epilepsy is not a disease in itself but a manifestation of some lesion of the central nervous system. Reference is made to the fact that alterations in the water balance, the acid-base balance. the oxygen or blood supply may modify the frequence of seizures. It is pointed out that certain lesions of the brain lend themselves to successful operative procedures and the possibilities of the hypodermic injection of chloline in the control of the seizures was brought out.

The effectiveness of ergotamine tartrate in the control of migraine is referred to. Fever therapy in the treatment of dementia paralytica seems to be thoroughly accepted now as the most promising therapeutic procedure. It is brought out that hyperpyrexia may be induced by many methods—infection with malaria, typhoid vaccine intravenously, diathermy and hot cabinets, but "perhaps the safest and simplest device is the electric blanket, which is easily controlled and keeps the patient's temperature at 104° to 105° F. by mouth for several hours without discomfort."

The reviewer allows himself to examine the latest theory concerning the pathogenesis of multiple sclerosis, advanced by T. J. Putnam as a result of several years' experimental work. This investigator has expressed the belief that multiple sclerosis and certain forms of encephalomyelitis are but different manifestations of the same process, similar conditions having been produced in animals by minute doses of tetanus toxin. Obstruction of the cerebral venules appears to be responsible for these changes and they are similar to those observed in human histological studies. The theory seems to strengthen the conservative point of view that "rest in bed during an exacerbation and an open air regimen with much rest and sunshine between attacks, combined with a careful search for and removal of foci of infection, comprise the best treatment at present."

Cobb closes his review by a brief discussion of the psycho-neuroses. First calling attention to the recent attempts to produce these disturbances in laboratory animals, to Pavlov's dogs with psychological conflicts and to Liddell's sheep with "enduring derangement of behavior," he then passes to psychoanalysis and points out that the method is becoming more and more popular in the treatment of the minor psychoses. To Freud whose latest book *New Introductory Lectures on Psychoanalysis* appeared in 1933, he pays high tribute, closing with the words: "Freud is a great man, certainly an artist and a philosopher with an extraordinary intuitive faculty. He has probably made some remarkably shrewd guesses which cannot be proved

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or disproved for many years to come. He weaves theories of human behavior that have hitherto been inexplicable. He sees deep into human nature. All great authors have done this, and some philosophers, but it is not science."

Cold Vaccination by Mouth.

V. Ross reported in 1934 the oral immunization of rats and human beings to certain types of specific pneumococci. Several years before this the oral administration of vaccine had been successfully employed by Besredka in typhoid fever. Oral immunization to colds is the subject of a short but noteworthy article in the June number of the *Journal of Immunology* by George E. Rockwell and Herman C. Van Kirk. They prepared a heterophile antigenic vaccine of streptococci and pneumococci. After the organisms were killed and dried they were incorporated in starch and put up in capsules containing one hundred billion of each organism. One capsule was administered each morning before breakfast with a glass of cold water for several days and thereafter a single capsule was taken at weekly intervals during the period of the experiment. Slight or negative reactions followed. The authors report the results of extensive experiments of cold prevention using this method of vaccination. Approximately one thousand persons were employed in the experiments, about one-half of whom served as controls. For the preceding years the five hundred who received the vaccine had suffered from an average of 3.03 colds per person per year. After vaccination the same group experienced but 1.30 colds per person per year, a decrease of 57 per cent. The control group on the other hand had about as many colds as they had averaged for the preceding three years.

A study of the serum of a selected number of the vaccinated group showed that the effect of oral vaccine in cold prevention varies directly with the titre of the blood in heterophile antibodies. Those cases which responded to vaccination with as much as 150-600 heterophile units per cubic centimeter of serum showed 96.7 per cent decrease in colds. Those with heterophile units from 60-75 showed 76.1 per cent decrease. Where there was little or no titrable antibody the incidence of colds was unchanged.

The advantages of oral administration of vaccines especially in the prevention of the common cold are obvious. Not only is this an easy method of administration, but the ability to take it frequently and over a long period of time meets one of the difficulties previously encountered in immunization against colds, namely, the short lived immunity enjoyed by most persons.

Typhoid Hints.

It won't be long before holiday seekers will be asking the advice of physicians regarding the necessity for prophylactic typhoid vaccination. In this connection it is perhaps well to review the facts at hand. The old idea that one attack of typhoid always confers immunity is probably not true and all persons whether they have had the disease or not should be vaccinated periodically. How often one should be vaccinated has never been settled definitely. Opinions vary widely. In the United States Army revaccination is practiced every four years. In the French army annual revaccination is advocated.

The division of the vaccine doses into three weekly administrations is purely an arbitrary matter designed to reduce reactions to a minimum. During the late war lipo-vaccine was employed so that the whole dose might be given at one inoculation. If it were not for the reactions the whole dose of the salt suspension vaccine might also be given at one sitting. The usual seven day interval need not be adhered to strictly. It has been claimed that inoculations given every twenty-four hours are equally effective. In cases where an unexpected journey abroad leaves only a short period for immunization this fact may be taken advantage of.

The reaction to typhoid vaccination is largely dependent upon where the vaccine is placed. If it enters a vein the reaction is sharp and alarming. If it enters a muscle the reaction is disagreeable and sometimes sickening. The mildest reactions follow careful administration of the vaccine in a position exactly beneath the skin. An eminence raised at the point of inoculation which persists for some time is said to indicate correct administration.

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Proceedings of Societies

Virginia State Board of Medical Examiners.

At the meeting of the Board, held on December 11-13, 1935, the following applicants successfully passed the examination:

Dr. Herman Sumner Freedman, New Haven, Conn.
Dr. Maxwell Herschel, Covington.
Dr. Louis John Saxe, University.
Dr. Randloph Beaton Turnbull, Sanatorium.
Dr. Robert S. Turner, New York, N. Y.
Dr. Edward William Wallace, Ballston.
Dr. Ayer Crouch Whitley, Ramseur, N. C.

Dr. Albert I. Pincus, Philadelphia, Pa., successfully passed the examination on Chiropody.

The following were granted licenses through reciprocity:

Dr. James Adlai Brown, Jr., Portsmouth.
Dr. Oren Douglas Boyce, Rural Retreat.
Dr. George Hopkins Carr, Jr., Portsmouth.
Dr. Robert Miller Cochrane, Dahlgren.
Dr. Paul Marion Crossland, Dahlgren.
Dr. Challis Haddon Dawson, Suffolk.
Dr. William Penn Frazer, Hamilton.
Dr. Ray Huddle Grubbs, Shenandoah.
Dr. Walter Paul Hammer, West New York, N. Y.
Dr. Esther Handcock, Staunton.
Dr. Alger Bernard Harrison, Franklin.
Dr. Frank Hill Hedges, Jr., Richmond.
Dr. Benjamin Ervin Hodge, Richmond.
Dr. Ralph Willis Jack, Farmville.
Dr. Carl Ludwig Knitter, Jr., Chincoteague.
Dr. George Walne Leavell, Bristol, Tenn.
Dr. John E. Looney, Grundy.
Dr. Edward Bruce Mewborne, Newport News.
Dr. John Glen McNiel, Pennington Gap.
Dr. Thomas Andrew Moneymaker, Alexandria.
Dr. Joseph Walter Neal, Jr., Greensboro, N. C.
Dr. John C. Palmer, The Plains.
Dr. Harry Howard Pope, Ivanhoe.
Dr. Julian Lorraine Price, Bristol, Tenn.
Dr. Russell Edward Reid, Portsmouth.
Dr. Carol Margaret Rice, Sweet Briar.
Dr. Gregory Washington Snead, Jr., Martinsville.
Dr. Warren Hooper Sears, Springfield, Mass.
Dr. Wendell Michael Steele, Richmond.
Dr. Milton Robert Stein, Clintwood.
Dr. Mark Thumin, Alexandria.
Dr. James Franklin Waddill, Norfolk.
Dr. William Christopher Williams, Greensboro, N. C.
Dr. Loyal C. Wray, Clintwood.

The Northern Neck Medical Society

Held its semi-annual meeting at Irvington, Va., October 24, 1935. The Society convened at noon with Dr. R. E. Booker, of Lottsburg, Va., presiding.

The following officers were elected for the ensuing year: Dr. L. S. Liggan, of Irvington, president; Dr. M. C. Oldham, of Lancaster and Dr. C. Y. Griffith, of Mt. Holly, vice-presidents; and Dr. E. T. Ames, of Montross, secretary-treasurer.

Interesting papers were read by Dr. R. T. Pierce, Jr., of Newport News, Va., on Spontaneous Subarachnoid Hemorrhage, and Dr. E. R. Moorman, of Kilmarnock, Va., on Interstitial Keratitis of Syphilitic Origin. The following physicians gave case reports: Dr. B. H. B. Hubbard, of White Stone, Dr. C. T. Pierce, of Litwalton, Dr. R. E. Booker, of Lottsburg, Dr. A. I. Dodson, of Richmond, Dr. D. G. Chapman, of Richmond, Dr. Wallace Gill, of Richmond, Dr. W. L. Peple, of Richmond, and Dr. Powell Williams, of Richmond, after which there was a round-table discussion, entered into by most of the local and visiting physicians.

Resolutions were adopted on the deaths of Dr. B. A. Middleton, of Emmerton, Dr. Mason Smith, of Fredericksburg, and Dr. H. J. Edmonds, of Kilmarnock.

After the scientific session, about twenty-five physicians remained for the banquet at the Irvington Beach Hotel.

The next meeting of the Society will be on the fourth Thursday of May, at Warsaw, Richmond County, Virginia.

The Northampton County Medical Society.

At the meeting of this Society, held on January 3rd, Dr. J. Morrison Hutcheson, Richmond, President-elect of the Medical Society of Virginia, spoke on "The Rationale of the Application of Certain Surgical Measures to the Relief of Hypertension"; and Dr. Beverley R. Tucker, Richmond, spoke on "Neurological Aspects of Pellagra."

The following officers for 1936 were elected: President, Dr. J. M. Lynch, Cape Charles; vice-president, Dr. Griffin W. Holland, Eastville; secretary-treasurer, Dr. W. Carey Henderson (re-elected), Nassawadox; and Board of Censors, Dr. W. J.

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Sturgis, Chairman, Nassawadox, Dr. S. K. Ames, Cape Charles, and Dr. J. W. Jackson, Machipongo.

Visitors from the Accomac Medical Society were Dr. John Robertson, Onancock; Dr. J. L. DeCormis and Dr. J. F. Edmonds, Accomac; Dr. J. H. Hiden, Pungoteague; Dr. Rooker White, Keller; and Dr. Ira Hurst, Parksley.

Accomac Medical Society.

The Accomac Medical Society held its annual election of officers on December 12, 1935, at which time Dr. Alva Mathews, Oak Hall, was elected president, and Dr. John W. Robertson, Onancock, vice-president and secretary-treasurer.

It was decided to hold the annual banquet in the Accomac Hotel on January 17, 1936, the ladies being invited for this occasion.

The Patrick-Henry Medical Society

Held its regular quarterly meeting in January at the Riverside Hotel, Bassetts, Va. Dr. John E. Gardner, of Roanoke, Va., gave a paper on "The Diseases of the Chest" which he illustrated by X-ray films. Dr. M. A. Sweaney, of the S. C. C. of Ridgeway, was a visitor. Dr. B. F. Noland, Dr. C. P. Smith and Dr. R. P. Fagg were elected as honorary members of the Society. The next meeting will be held at Martinsville, Va., in April.

Officers of the Society are: President, Dr. A. W. Rucker, Fieldale; vice-president, Dr. D. L. Fleshman, Bassetts; secretary-treasurer, Dr. C. R. Titus, Bassetts.

Floyd County Medical Society.

Officers of this Society elected for the year 1936 are: President, Dr. S. T. Yeatts, and secretary-treasurer, Dr. F. Clyde Bedsaul, both of Floyd, Va. The Society holds two meetings each year, these being in July and December.

The Lynchburg Academy of Medicine

Met in regular session on January 6th. The new officers, Dr. J. Henry Rawlings, president, and Dr. John Wyatt Davis, vice-president, were installed at this meeting, and Dr. John Hundley, Jr., was renamed as secretary-treasurer. Drs. Edwin A. Harper and C. E. Keefer, both of Lynchburg were elected to membership in the Academy.

Dr. Fred Hodges, of Richmond, presented a very interesting address on "Roentgen Therapy," illustrated with slides, and stressing the X-ray treatment of infection.

Roanoke Academy of Medicine.

The regular meeting of the Academy was held on January 6th, and the following papers were presented: Interpretation of Changes in the Eye Grounds by Dr. Charles A. Young; The Heart Valves—Normal and Pathological Considerations by Dr. J. E. Gardner; and The Clinical Significance of Auricular Fibrillation with Electrocardiograms by Dr. Harry Golston. Dr. M. A. Johnson also presented several cases.

Attention was called to the fact that the Academy broadcasts over WDBJ each Wednsday afternoon at 6:25.

News Notes

Appointed to Council of Southern Medical Association.

Dr. Vincent W. Archer, University, has been appointed a member of the Council of the Southern Medical Association from Virginia for a regular Council term of five years, the appointment having been announced recently by the President, Dr. Fred M. Hodges, of Richmond. Dr. Archer succeeds Dr. R. Finley Gayle, Jr., of Richmond, who, having served the constitutional limit, was not eligible for reappointment.

A Postgraduate Institute,

Offering an intensive and interesting study of the newer work in the field of cardio-vascular and renal diseases, will be conducted by the Philadelphia County Medical Society during the week of April 20th to 24th, inclusive.

The program, to be held in the Bellevue-Stratford Hotel, Philadelphia, has been designed to meet the needs of all members of the profession, but particulary those in general practice. Physicians from all parts of the eastern and east-central United States are invited to attend.

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Lecturers, about thirty in number, have been selected from among the foremost teachers in this great center of medical education. The medical faculties of the University of Pennsylvana, Jefferson, Temple, and Woman's Medical College of Pennsylvania are represented on the program. While approaching the subject from specialized viewpoints—those of the physiologist, cardiologist, pediatrician, surgeon, roentgenologist, bacteriologist, internist—the presentations will be of a strictly practical nature, and should be of real value to the general physician, who finds cardio-renal conditions occupying a large proportion of his time.

The Philadelphia County Medical Society, in conducting the Postgraduate Institute, is meeting the demands of many physicians, who have felt the organized profession should provide them with this type of opportunity for keeping abreast of medical progress and thus maintaining the highest standards of medical service. The only charge is a $5.00 registration fee to cover the Institute's expenses. It is hoped to make the event an annual one, giving special attention each year to a different subject.

Married.

Dr. John Glen McNiel, Pennington Gap, Va., and Miss Mary Roberta Kuyk, Richmond, Va., December 28th.

Dr. Charles Walton Purcell, University, Va., and Miss Cleo Virginia Ashby, Raleigh, N. C., in January.

The Gill Memorial Eye, Ear and Throat Hospital,

Roanoke, Va., announces that its tenth annual Spring Graduate Course in Ophthalmology, Otology, Rhinology, Laryngology, Facio-Maxillary Surgery, Bronchoscopy and Esophagoscopy will be held April 6-11, 1936. Guest members of the faculty are Drs. John A. Kolmer, James A. Babbitt, Robert H. Ivy, Walter I. Lillie, and J. Milton Griscom, all of Philadelphia; Dr. Wells P. Eagleton, Newark, N. J.; Dr. Perry G. Goldsmith, Toronto, Canada; and Dr. Meyer Wiener, St. Louis, Mo.

In order that each matriculate may receive individual instruction and personal contact with the instructors, the class will be limited to fifty. For information, write the Superintendent, Gill Memorial Eye, Ear and Throat Hospital, Box 2467, Roanoke, Va.

The Southeastern Surgical Congress

Will meet in New Orleans, March 9-11, 1936. A number of prominent surgeons are included on the program, and the meeting promises to be one of unusual interest.

Further information may be secured from Dr. B. T. Beasley, secretary-treasurer, 1018 Doctors Bldg., Atlanta, Ga.

Dr. J. E. Gladstone,

Class of '34, University of Virginia, Department of Medicine, recently located at Exmore, Va., is now connected with the Civilian Conservation Corps, at Elkton, Va.

On Kiwanis Committees.

Dr. W. E. Croxton and Dr. M. H. Harris, both of West Point, Va., have been named as members of important committees of their club for the coming year.

Dr. Q. H. Barney

Has been elected health officer of Alta Vista, Va., and community, to succeed the late Dr. J. Arnold Board.

Dr. F. T. Hauser,

Formerly of Bland, Va., but more recently with the Civilian Conservation Corps, is now located at Station Hospital, Fortress Monroe, Va.

Dr. R. L. Hudnall,

Beverlyville, Va., was elected as a member of the board of supervisors of Northumberland County, at a meeting held in Heathsville in January.

Dr. Charles N. Eckerson,

Of the class of '35, Medical College of Virginia, who later interned at the Holy Name Hospital, Teaneck, N. J., is now located at Cameron, N. C., where he is engaged in general practice.

Dr. Herbert C. Jones,

Petersburg, Va., was recently elected first vice-president of the Chamber of Commerce of that city.

Annual Report of the U. S. P. H. S.

In the annual report of the public health of the United States, the Surgeon General of the U. S. Public Health Service states that health conditions in general remained good during the year ended June 30, 1935. The preliminary death rate for the calendar year 1934 was 10.9; the birth rate increased, being 3 per cent higher than in 1933, but

the infant mortality rate was slightly increased in 1934 as compared with 1933.

The death rates from typhoid fever and diphtheria were both 3.3 per 100,000 population. In 1900 the death rate for typhoid fever was 35.9 per 100,000 and the diphtheria death rate was 43.3. This means that there were 91,000 fewer deaths from these two causes in 1934 than would have occurred if the 1900 rates had prevailed.

The tuberculosis death rate continued to decrease, the 1934 rate being the lowest ever recorded.

The U. S. Public Health Service has also done a great deal of research work, covering the cause and prevention of disease, etc.

Dr. James W. Hunter,

Norfolk, Va., announces the removal of his office to 405-7 Medical Arts Building, and that he will limit his practice to diseases of the heart and to X-ray diagnosis.

Dr. B. H. Knight,

Surry, Va., has recently been elected to head the first aid of the Surry County Red Cross.

Petersburg (Va.) Hospital Physicians Staff.

Dr. Ruth Mason-Grigg was recently elected chairman of this staff to succeed Dr. W. M. Bowman. Other officers are Dr. Leta J. White, vice-chairman; Dr. H. Cantor, secretary; and Dr. E. W. Perkins, Jr,. vice-secretary. Other official groups are headed by Dr. Fletcher J. Wright, medical section; Dr. J. Bolling Jones, surgical section; Dr. J. D. Osborne, X-ray section; and Dr. D. D. Willcox, eye, ear, nose and throat section.

Dr. John W. Bowdoin,

Bloxom, Va., has recently been appointed by the board of supervisors as superintendent of public welfare for Accomac County.

George Washington University Postgraduate Clinic.

The Fourth Annual George Washington University Postgraduate Clinic will be held in Washington, D. C., on Saturday, February 29th, at the University Hospital from 9:00 A. M. to 4:30 P. M. All physicians who are interested are cordially invited to attend the meetings.

Dr. Lee S. Liggan,

Irvington, Va., has been elected chaplain of the Odd Fellows Lodge of that place for the year 1936.

New York Polyclinic Medical School and Hospital.

At a meeting of the Clinical Society held on January 6, 1936, the following program was presented: (1) "Surgical Treatment of Primary Carcinoma of the Lung" by Richard H. Overholt, M. D. (Lahey Clinic, Boston, Mass.). The discussion was opened by Howard Lilienthal, M. D., Chevalier Jackson, M. D., and Pol N. Coryllos, M. D. (2) "Surgical Management of Prostatic Obstruction" by Joseph F. McCarthy, M. D. The discussion was opened by Oswald S. Lowsley, M. D., Abraham Hyman, M. D., Clarence G. Bandler, M. D., and Daniel A. Sinclair, M. D.

Dr. Russell L. Cecil gave an afternoon lecture on Wednesday, January 22nd on "Backache."

Dr. John W. Simmons,

Martinsville, Va., was recently presented with a cane by physicians of that town, in recognition of his completion of fifty years of medical service.

Dr. B. J. Atkinson,

North Emporia, Va., has been appointed chairman of the Public Health Committee of the Emporia Chamber of Commerce for the present year.

Dr. Jesse Bruce Hopkins,

Richmond, Va., a first lieutenant in the Medical Corps Reserve, has, with his consent, been ordered to active duty for a period of six months, effective January 6, 1936, and is with the Civilian Conservation Corps, at Big Stone Gap, Va. Dr. Hopkins is a member of the class of '33, Medical College of Virginia.

Laboratory Technicians Honored.

Mrs. Helen Doswell Gates and Miss Lucy Robinson, technicians at the Stuart Circle Hospital, Richmond, Va., under the direction of Dr. Regena Cook Beck, have both received the degree of laboratory technologist, conferred by the American Society of Clinical Pathologists. This is the highest degree given to persons engaged in technical laboratory work and is given for outstanding service rendered in any of the branches of clinical pathology by research, teaching and scientific endeavor.

Dr. A. H. Deekens,

Recently of Richmond, Va., after spending several months at Kilmarnock, Va., has left for New Orleans, La., where he will be located at 1531 Ex-

position Boulevard about March 1st, for special work.

Dr. Francis H. McGovern

Has recently located in Danville, Va., where he is associated with Dr. M. H. Watson in the practice of diseases of the eye, ear, nose and throat. Dr. McGovern is a graduate of the University of Pennsylvania, class of '32, and recently completed a two-year residency in his specialty at the University of Virginia Hospital.

Dr. S. A. Draper,

Recently of Christiansburg, Va., located in Roanoke, Va., the first of this month, with offices at 801 Carolina Avenue, South.

Appointment of Senior Medical Internes for the U. S. Public Health Service.

The U. S. Public Health Service will consider applications to fill a number of vacancies which exist at the present time and also vacancies which will occur about July first next, for second-year medical internes. Any young physicians, not over thirty years of age, who have graduated from a Class "A" medical college and who have completed, or will shortly complete, one year's interneship in an approved hospital are eligible to apply.

The Public Health Service also desires to secure applications only from candidates who are interested in the Service as a career. Those interested should address an inquiry to the Surgeon General, U. S. Public Health Service, Washington, D. C., stating the date they will be available for duty and more complete information and the necessary blanks upon which to make application will be furnished.

Dr. Driscoll Honored.

Dr. T. Latane Driscoll, Richmond, Va., was elected honorary grand vice-president of Alpha Kappa Kappa, international medical fraternity, at its quadrennial convention held in Richmond early in January.

Dr. William Reese,

Petersburg, Va., was elected vice-president of the Kiwanis Club, of that city, at its meeting in December. Dr. George H. Reese, retiring president, was named as chairman of the public welfare committee.

Dr. Robert H. Detwiler,

Who graduated from Georgetown University, Washington, D. C., in 1933, has located at Clarendon, Va. He interned at Georgetown University Hospital and later had a residency at a hospital in Wilmington, Del. He is now connected with the Children's Hospital, in Washington, D. C.

Dr. Milford M. Greenbaum,

Class of '34, Medical College of Virginia, who interned at the Morrisania City Hospital, New York, and later at the Paterson General Hospital, Paterson, N. J., announces the opening of his office for the practice of medicine and surgery at 1254 Grant Avenue, near 167th Street, Bronx, N. Y.

Physician Wanted.

A physician is needed at Amissville, Va. A settled man with experience preferred. A fine opening for the right man as there is plenty of work to do. For further information, write Mr. James C. Cropp, Amissville, Va. (*Adv.*)

For Sale—

Physician's used equipment, instruments, and diatherm. Address No. 175, care the VIRGINIA MEDICAL MONTHLY, 1200 E. Clay St., Richmond, Va. (*Adv.*)

Specialist Wanted.

Physician specializing in diseases of the eye, ear, nose and throat needed in good locality in Virginia. Address "Specialist," care this journal. (*Adv.*)

Young Physician Wishes Temporary Work.

Physician completing residency on April 1st, wishes to secure temporary work in general practice or diseases of children for April, May and June. For information, write "Y. P. W." care this journal. (*Adv.*)

For Sale—

Physician's McCaskey System in good condition. Price reasonable. Address "McCaskey" care VIRGINIA MEDICAL MONTHLY. (*Adv.*)

For Sale—

Gas-oxygen outfit. Portable. For obstetrics and minor surgery. In first class condition. Price reasonable. Address "Oxygen," care this journal. (*Adv.*)

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Obituary Record

Dr. Walker Aylett Campbell,

Old Church, Va., died January 21st, at his home in that place. He was born at Enfield, Va., sixty years ago and, after completing his academic education, studied medicine at the former University College of Medicine, Richmond, Va., from which he graduated in 1903. He had been a member of the Medical Society of Virginia since 1904. He is survived by his wife and seven children.

Dr. Francis Vaughan Fowlkes,

Well-known to many Virginia doctors as a representative of Mead Johnson and Company, died January 20th, after a short illness, though his health had not been good for several years. Death followed a paralytic stroke which he suffered several days earlier. He was a native of Amelia County, Virginia, and sixty-eight years of age. He was graduated in medicine from the University of Maryland in 1887. His wife and four children survive him.

Dr. Isaac Scott Stone,

Well-known surgeon of Washington, D. C., died December 22nd, at his home in that city, after an illness of several months. Born in Sandy Spring, Md., in 1851, he graduated from the University of Maryland in 1872 and practiced medicine in Lincoln, Loudoun County, Virginia, for several years before moving to Washington in 1890. He became a member of the Medical Society of Virginia in 1884 and was made an honorary member in 1904. He had always been an interested member and attended most of its sessions until he retired from active practice. For thirty years before his retirement from active practice, Dr. Stone served on the staff of Columbia Hospital for Women as attending surgeon and was also professor of gynecology in Georgetown University. He was a fellow of the Royal Society of Medicine, London, a fellow of the American College of Surgeons, and a member of other medical and surgical societies, and the author of many papers in the field of medicine and surgery. He held the degree of Sc.D. from the University of Maryland and LL.D. from Georgetown. Dr. Stone was one of the founders of the Southern Surgical Association and in 1918-19 its president.

Surviving him are three children.

Dr. Charles W. Gleaves,

Wytheville, Va., died December 12th, at the age of eighty. He graduated from the Medical College of Virginia in 1879, and practiced medicine for a number of years following his graduation. For the past thirty years he had been in banking business, and was president of the First National Farmers Bank of Wytheville. Four daughters survive him.

Dr. Edward B. Heckel,

Well-known ophthalmologist of Pittsburgh, Pa., died December 23, 1935, of pneumonia. He was seventy years of age and received his medical education at the Bellevue Hospital Medical College from which he graduated in 1890. Dr. Heckel was a former chairman of the Board of Trustees of the American Medical Association and was also a member of the House of Delegates of that Association. He was a member of many ophthalmological societies and served as president of the Pittsburgh Ophthalmologic Society for fifteen years.

Dr. William Roffin Goley,

Shallotte, N. C., died November 12, 1935, at the age of fifty-eight. He was a graduate of the former University College of Medicine, Richmond, in 1901.

Dr. Edgar Stuart Estes,

St. Augustine, Fla., died of heart disease, December 6, 1935. He graduated from the University of Virginia, Department of Medicine, in 1905. Dr. Estes was formerly city health officer at St. Augustine.

Dr. George W. Richardson,

West, Point, Va., died suddenly as a result of a stroke of apoplexy, December 29, 1935. He was seventy-six years of age and graduated from the Medical College of Virginia in 1880.

Dr. Nathan Porter Colwell,

Formerly secretary of the Council on Medical Education and Hospitals of the American Medical Association, died at his home in Wilmette, Ill., January 6th. He became the first secretary of the Council in 1906 and served until his retirement in 1931.